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CASIO
DT-X8 Series
Quick Start Guide

(Version 1.04)

CASIO Computer Co., Ltd.

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Editorial Record

Manual Version no.	Date edited	Page	Content
1.00	January 2011	all	Original version
1.01	February 2011	64	In Chapter 8.2, description about sample is deleted.
		66	In Chapter 8.3, description about sample is deleted.
		10	In Chapter 2.2, HA-F21LBAT-A option is deleted.
1.02	March 2011	6	OS description name is updated.
1.03	July 2011	13	In Chapter 2.3, supported 64bit OS is added.
1.04	September 2011	7, 8, 43	NFC Library is added.
		10	Full range imager model and NFC model are added.

Preface

This guide clearly and concisely sets out the information developers need to know to get started with the CASIO DT-X8 series handheld terminals with the integrated Windows® Embedded CE OS development. The best methods of connecting to your development system are covered and step by step instructions for installing and testing the CASIO BDKs are included.

The purpose of this guide is to get you to the point where you can start development; you should refer to the library manuals for detailed information on the specific APIs.

1. Product Overview

1.1 Features at a Glance

The DT-X8 has been designed using the new concept of the Human-centered Design Processes and is capable of performing a wide variety of powerful functions.
The following is a brief overview of the features available on the DT-X8 series handheld terminals. For further detail on the hardware specifications, refer to DT-X8 Series Hardware Manual.

Outstanding development environment

- Microsoft® Windows® Embedded CE 6.0 R3 English Version as the built-in OS
- Visual Studio 2008
- Visual Studio 2005

Capability of various communication systems

- Built-in ultra-small WLAN module compatible with the IEEE802.11b/g standard
- Bluetooth® Version 2.0
- Serial interface with USB version 1.1 (Host/Client)

Small size, light weight

- Dimensions : Approx. 65.75 (W) x 187.44 (D) x 41.19 (H) mm
- Weight : Approx. 265 g

Improved durability

- Impact resistance : 3.0 m in height *
- Dust/Water-splash proof : IP67 level (compliant with IEC60529 International Standard)

Capable of scanning industrial standard bar code symbologies

- Readable bar code symbologies:
  UPC-A/E, EAN8, EAN13, Codabar, Code39, Code93, Code128/GS1-128, ITF, MSI, IATA, GS1 DataBar Omnidirectional, GS1 DataBar Limited, GS1 DataBar Expanded, GS1 DataBar Stacked, GS1 DataBar Expanded Stacked

CPU, Memory

- High-performance CPU
  Marvell® PXA320 Application Processor (runs at maximum 624 MHz)
- Large-capacity memory
  RAM : 128 MB
  F-ROM : 256 MB (user area; approximately 160 MB)

- The drop durability height is a measured value resulting from actual testing. It does not necessarily guarantee the product from damage.

1.2 Library Configuration

The DT-X8 Software Development Kit (“BDK”) provides various libraries including those listed in the table.

Table 1.1

Library	Description	C++	VB C#
System Library	Library that is used to control the system.	Yes	Yes
Laser Scanner Library	Library that is used to control the built-in laser scan engine.	Yes	Yes
Bluetooth Library	Library that is used to control the built-in Bluetooth module.	Yes	Yes
Imager Library	Library that is used to control the built-in CMOS Imager.	Yes	Yes
JPEG Library	Library that is used to handle and manipulate JPEG image functions.	Yes	-
FLINK Library	Library that is used to control and carry out transmission/reception of files between PC and other device.	Yes	Yes
NFC Library	Library that is used to control to communicate with IC card.	Yes	Yes

Note:

The abbreviations used in the table are;

C++ : Visual C++
VB : Visual Basic .NET
C# : Visual C# .NET

Table 1.2 shows each file name of the Dynamic Link Library and Dynamic Link Class Library.

Table 1.2

Library		Dynamic Link Library	Dynamic Link Library (Class Library)
Common Device Control Library			
	System Library	SystemLib.dll	SystemLibNet.dll
	Laser Scanner Library	OBReadLib.dll	OBReadLibNet.dll
	Bluetooth Library	BluetoothLib.dll	BluetoothLibNet.dll
	Imager Library	ImagerLib.dll	ImagerLibNet.dll
	NFC Library	NFCLib.dll	NFCLibNet.dll
JPEG Library		JpegCe.dll	None
FLINK Library		FlinkLib.dll	MoFlinkLib.dll

1.3 Development Manuals

The DT-X8 Software Development Kit ("BDK") provides various development reference manuals as described in the table below.

Table 1.3

Development Manual	Description
Quick Start Guide	This reference manual.
Software Manual	Reference manual that describes software specifications in detail for all the software integrated in DT-X8 handheld terminal.
Hardware Manual	Reference manual that describes hardware specifications in detail on each dedicated option and DT-X8 handheld terminal
System Library Manual	Reference manual that describes individual functions in detail for System Library.
Laser Scanner Library Manual	Reference manual that describes individual functions in detail for Laser Scanner Library.
Bluetooth Library Manual	Reference manual that describes individual functions in detail for Bluetooth Library.
Imager Library Manual	Reference manual that describes individual functions in detail for Imager Library.
JPEG Library Manual	Reference manual that describes individual functions in detail for JPEG Library.
FLINK Library Manual	Reference manual that describes individual functions in detail for FLINK Library.
NFC Library Manual	Reference manual that describes individual functions in detail for NFC Library.

2. Prerequisites

2.1 Skills Required

The following skills are required by developers aiming to develop application software for the DT-X8 terminal.

- Windows programming
- A good knowledge of one or more of the following
  - Visual C++
  - Visual Basic .NET
  - Visual C# .NET
  - Browser based applications (not covered in this guide)

The following skills or experience are also desirable.

- Windows CE devices
- ActiveSync
- Some networking experience

2.2 Hardware Required

The following models of the DT-X8 series and dedicated options are available.

Table 2.1 List of available models

Model no.	Scanner	NFC	Extension slot	WLAN (802.11 b/g)	Bluetooth
DT-X8-10E	Laser	No	microSD	Yes	Yes
DT-X8-10C-CN	Laser	No	microSD	Yes	Yes
DT-X8-20E	Imager	No	microSD	Yes	Yes
DT-X8-20C-CN	Imager	No	microSD	Yes	Yes
DT-X8-11E	Laser	Yes	microSD	Yes	Yes
DT-X8-11C-CN	Laser	Yes	microSD	Yes	Yes
DT-X8-21E	Imager	Yes	microSD	Yes	Yes
DT-X8-21C-CN	Imager	Yes	microSD	Yes	Yes
DT-X8-40E	Full range imager	No	microSD	Yes	Yes
DT-X8-40C-CN	Full range imager	No	microSD	Yes	Yes
DT-X8-41E	Full range imager	Yes	microSD	Yes	Yes
DT-X8-41C-CN	Full range imager	Yes	microSD	Yes	Yes

Table 2.2 List of the dedicated options

Option	Product	Model no.	Remark
Cradle	USB Cradle	HA-K60IO	
		HA-K60IO-CN	
	Ethernet Cradle	HA-K62IO	
		HA-K62IO-CN	
	USB and Charging Unit	HA-K65US	
		HA-K65US-CN	
Battery charger	Dual Battery Charger	HA-F32DCHG	
		HA-F32DCHG-CN	
AC adaptor		AD-S15050B-N	- For HA-K60IO, HA-K65US
		AD-S15050BE-CN	
		AD-S42120B-N	- For HA-K62IO, HA-F32DCHG
		AD-S42120BE-CN	
Power Cable for AD-S15050B-N, AD-S42120B-N		AC-CORD-EU	- For Europe
		AC-CORD-US	- For USA/Canada
		AC-CORD-TW	- For Taiwan
		AC-CORD-KR	- For Korea
		AC-CORD-AU	- For Australia/New Zealand
Battery	Large Battery Pack	HA-K23XLBAT	
		HA-K23XLBAT-CN	
Cable	USB cable	DT-380USB-A	- For between cradle and PC
		DT-380USB-A-CN	
Others	Hand Belt	HA-K95HB	
		HA-K95HB-CN	

Note:

"-CN" attached at the end of model number in Tables 2.1 and 2.2 denotes that the model is dedicated for the final destination of China. A note about compliance with the Chinese "RoHS" requirement promulgated by the Ministerial Decree No. 39 is included in the carton box; the RoHS compliant seal is affixed on the body and the seal of the packing material recycle marking is affixed on the carton box.

See the following pages for DT-X8 terminal external views and the dedicated options.

External views of the DT-X8 and the dedicated options

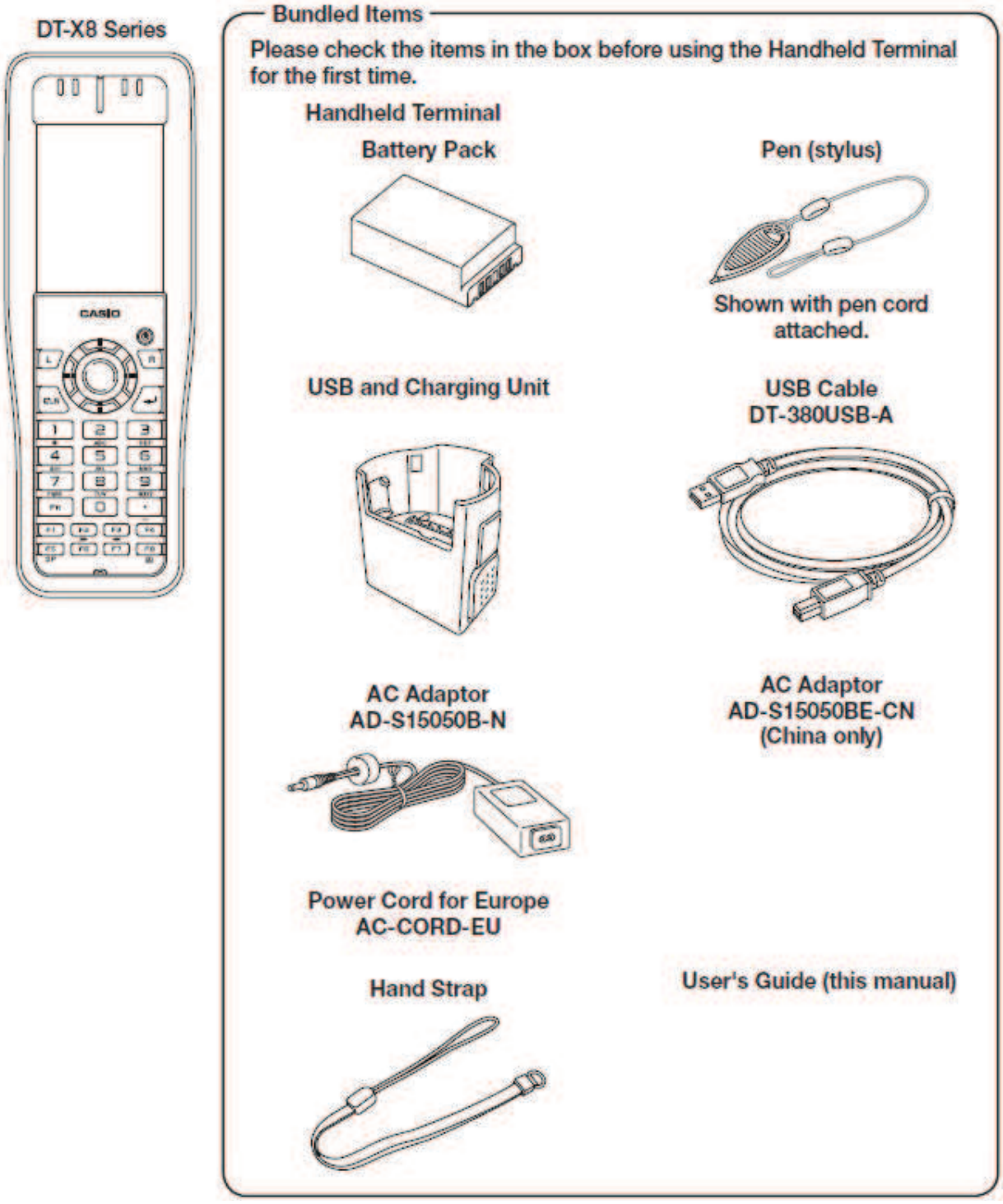

Figure 2.1

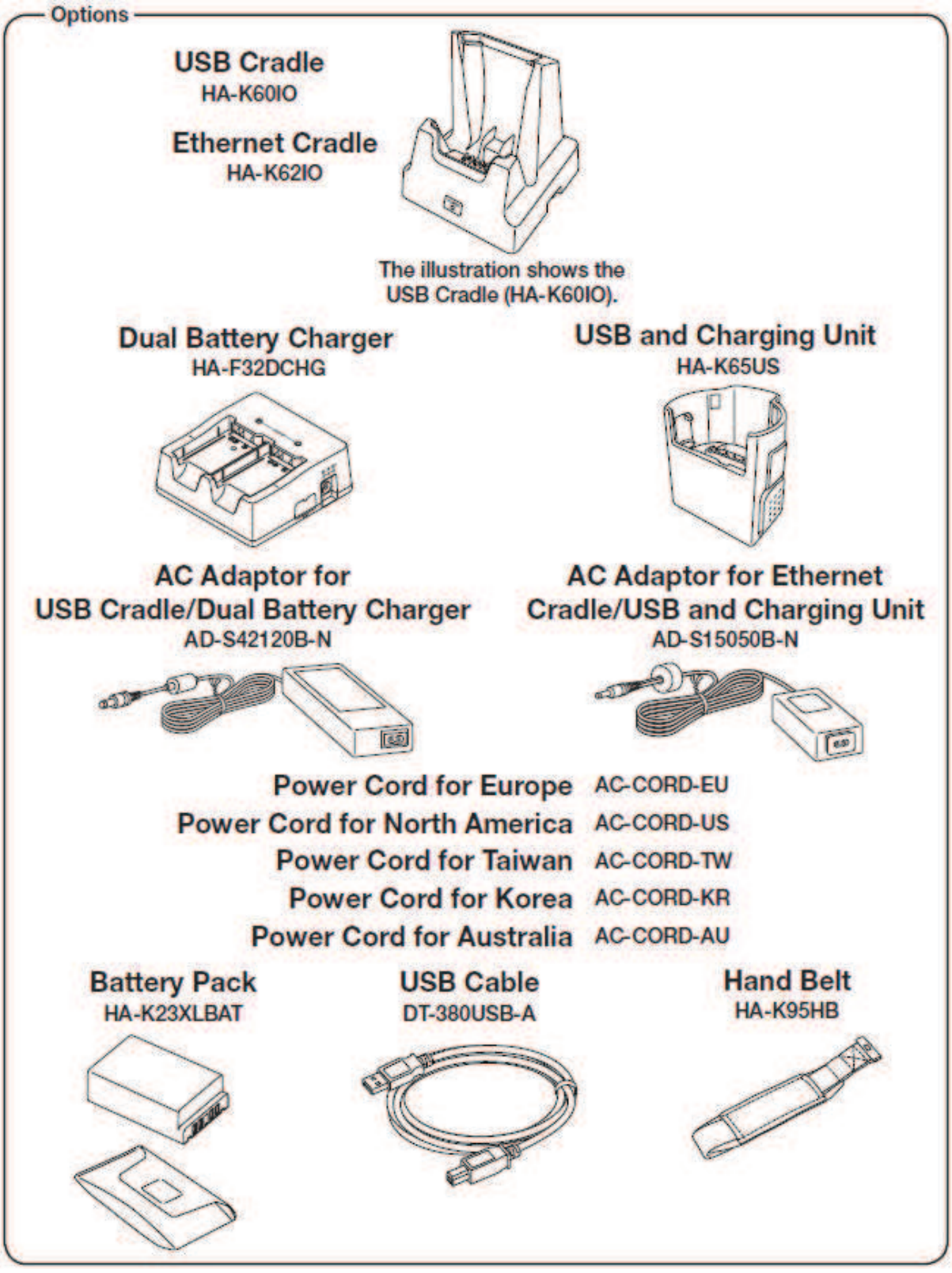
Options
USB Cradle
HA-K60IO
Ethernet Cradle
HA-K62IO
The illustration shows the USB Cradle (HA-K60IO).
Dual Battery Charger
HA-F32DCHG
USB and Charging Unit
HA-K65US
AC Adaptor for USB Cradle/Dual Battery Charger
AD-S42120B-N
AC Adaptor for Ethernet Cradle/USB and Charging Unit
AD-S15050B-N
Power Cord for Europe AC-CORD-EU
Power Cord for North America AC-CORD-US
Power Cord for Taiwan AC-CORD-TW
Power Cord for Korea AC-CORD-KR
Power Cord for Australia AC-CORD-AU
Battery Pack
HA-K23XLBAT
USB Cable
DT-380USB-A
Hand Belt
HA-K95HB

Figure 2.2

2.3 Software Required

PC Operating System

32bit

- Microsoft Windows 2000 Professional Service Pack 4 or later
- Or Microsoft Windows 2000 Server Service Pack 4 or later
- Or Microsoft Windows XP Professional Service Pack 2 or later
- Or Microsoft Windows 2003 Server Service Pack 1 or later
- Or Microsoft Windows Vista (Business / Ultimate)
- Or Microsoft Windows 7 Service Pack 1 or later (Professional / Ultimate)
- Or Microsoft Windows Server 2008 Service Pack 1 or later

64bit

- Microsoft Windows 7 Service Pack 1 or later (Professional / Ultimate)
- Or Microsoft Windows Server 2008 Service Pack 1 or later

Development platform

The following software tools and libraries are required in order to develop software for the DT-X8. Please ensure that you download or purchase the correct Microsoft tools as appropriate.

- Microsoft Visual Studio 2008 (not free of charge)
- Microsoft Visual Studio 2005 + Service Pack 1 (not free of charge)
- Microsoft ActiveSync 4.2 (or later)
  Download for free from;
  http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en
- Microsoft Windows Mobile Device Center 6.1 (for Windows Vista)
  Download for free from;
  http://www.microsoft.com/downloads/details.aspx?familyid=46F72DF1-E46A-4A5F-A791-09F07AAA1914&displaylang=en

CASIO DT-X8 BDK

Download the DT-X8 BDK from;
http://www2.casio.co.jp/system_en/pa/PADealer/
(The site requires your user name and password. Enter your user name and password as issued by CASIO.)

3. Installing BDK to PC

3.1 Application Development

This chapter explains about what you need to set up for the development environment before starting your application development.

1. Installing Development Platform
   Install Microsoft's development platform which supports Visual Studio 2008 and Visual Studio 2005. For detail, refer to Chapter 2.3 "Software Required".

2. Installing CASIO BDK to PC
   Install Casio's BDK ("Basic Development Kit") and various libraries if necessary. For installation method, refer to Chapter 3.2 "Installing CASIO BDK Files".

3. Connecting DT-X8 to PC (via either ActiveSync or Windows Mobile Device Center)
   Connect the DT-X8 to PC via Microsoft's ActiveSync (for Windows XP or any other OS before Windows XP) or via Windows Mobile Device Center (for Windows Vista or later). For connection method, refer to Chapter 5 "Connecting the DT-X8 to PC".

4. Setting up the Development Environment
   Transmit the Casio's libraries to the DT-X8.
   For detail, refer to Chapter 6 "Setting Up the Development Environment".

5. Installing the Device Emulator
   Install the Device Emulator for the DT-X8. For installation method, refer to Chapter 7 "Device Emulator". If not necessary to install, go to "6. Application Development" below.

6. Application Development
   Now, the application development environment is set up and your development with the development platform can be started. After application is developed, transfer it to the Device Emulator or an actual terminal of the DT-X8 via ActiveSync or Windows Mobile Device Center for check on the operability. For application development method and transferring your application, refer to Chapter 8 "Visual Studio".

3.2 Installing CASIO BDK Files

Download the CASIO DT-X8 BDK installation CD image file from the following site and write it to a CD-ROM media.
http://www2.casio.co.jp/system_en/pa/PADealer/
(The site requires your user name and password. Enter your user name and password as issued by CASIO.)

Notes:

- If you had already installed DT-X8 BDK Ver. 1.xx, be sure to uninstall it before installing Ver. 2.xx.
- If any file of the DT-X8 BDK Ver. 1.xx is remained in the following folders after uninstalling, delete it manually.

  C:\Program Files\CASIO\MBSYS
  C:\Program Files\Windows CE Tools\wce500
- If your PC runs in the Windows Vista or later OS, first you must disable the User Account Control ("UAC") by following the process below before installing the CASIO BDK Files.

  Case of using Windows Vista and Windows Server 2008
  - Navigate to **Control Panel → User Accounts → Enable or Disable the User Account Control**. Remove the check on **User Account Control (UAC) to protect your PC**, and then click **OK** button.

  Case of using Windows 7
  - Navigate to **Control Panel → User Accounts → Change User Account Control Settings**. Select **Never notify** in Choose when to be notified about changed to your computer setting.

Installing ExportBDK

1. When the CASIO DT-X8 BDK CD-ROM is inserted in the drive of PC, the following menu screen appears automatically.

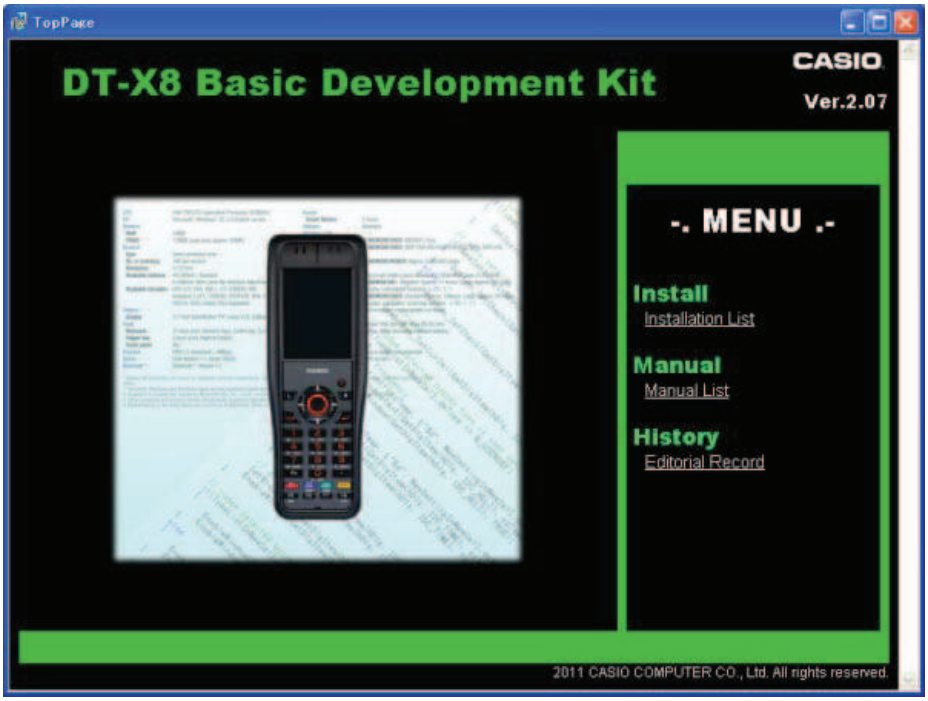

Figure 3.1

2. Click **Installation List** in Figure 3.1. The installation screen appears.

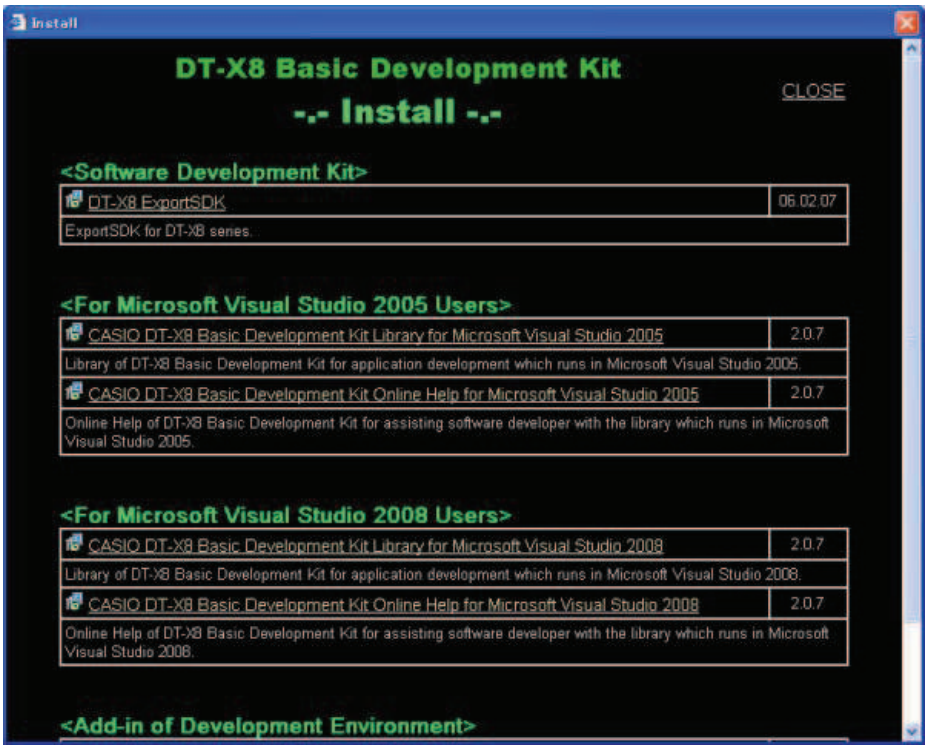

Figure 3.2

3. Click **DT-X8 ExportSDK** to display the Setup Wizard. Choose any one of the buttons in the screen.

Installing Library

The DT-X8 Library is available for the below development platforms.

- Microsoft Visual Studio 2008
- Microsoft Visual Studio 2005

Notes:

1. The Library header file (*.h) and the Import library file (*.lib) are installed in the following folder.
   C:\Program Files\CASIO\MBSYS\include : Header file
   C:\Program Files\CASIO\MBSYS\lib\ARMV4I : Import library file
2. The Class library DLL file (*.dll) is installed in the following folder.
   C:\Program Files\CASIO\MBSYS\WindowsCE
3. When the Library is installed in PC, the Help file (*.chm) is installed in the following folder.
   C:\Program Files\CASIO\MBSYS\HELP

The Help file can be accessed by navigating to **Start** menu → **All Programs** → **CASIO Basic Development Kit** → **Help**.

Installing Online Help

Besides the Help file described above, the Online Help is also available for the below development platforms. The installation of the Online Help is initiated in the **Installation List**.

- Microsoft Visual Studio 2008
- Microsoft Visual Studio 2005

After the installation is complete, Microsoft Visual Studio starts up. The Online Help file can be accessed by navigating to **Help** → **Contents** menu.

Installing Sample Program

When the **Sample** is chosen in the **Installation List**, the sample program folder in the CD-ROM appears on the screen. The Sample program folder is available for the development platforms below. Copy it into your PC.

- VS2008 for Microsoft Visual Studio 2008
- VS2005 for Microsoft Visual Studio 2005

If your sample program is with "Read-only" attribute set effect. Be sure to disable the attribute before using it.

4. Connecting Power Supply to Cradle

4.1 HA-K60IO

Use the dedicated AC adaptor (AD-S15050B) for supplying power to the HA-K60IO USB Cradle. Ensure that you connect the AC adaptor to the cradle before starting communication between the DT-X8 and PC via the cradle. Follow the steps below to connect the power supply to the DT-X8 using the dedicated AC adaptor.

1. Plug the AC adaptor into the AC adaptor jack where "DCIN5V" is printed on the back of the cradle.
2. After connecting the power cable to the AC adaptor, plug in the plug to an electrical outlet.
3. Connect a USB cable (DT-380USB-A) to the USB port on the back of the cradle, and then connect the other end of the cable to the PC.
4. Align the USB cradle mount holes on the back of the DT-X8 with the mount hooks on the cradle after aligning the contacts on the bottom of the DT-X8 with the power contacts of the cradle. The power LED on the front of the cradle will light green if the DT-X8 has been properly mounted.

Status of Indicator 1 on DT-X8

Orange	: Charging
Red	: Standby due to battery pack error or the surrounding temperature is out of the range (charging begins when the temperature returns within the correct range.)
Green	: Charging complete

Notes:

- Never short the power contacts of the cradle. This damages the cradle.
- Do not subject the DT-X8 and cradle to vibration or impact during communication. This results in communication being interrupted.
- When mounting the DT-X8, securely attach it to the mount hooks of the cradle and check that the power LED on the front of the cradle lights green. Charging the battery pack or communication will not proceed if it is not mounted properly.

4.2 HA-K62IO

Use the dedicated AC adaptor (AD-S42120B) for supplying power to the HA-K62IO Ethernet Cradle. Ensure that you connect the AC adaptor to the cradle before starting communication between the DT-X8 and PC via the cradle. Follow the steps below to connect the power supply to the DT-X8 using the dedicated AC adaptor.

1. Plug the AC adaptor into the AC adaptor jack on the back of the Ethernet Cradle.
2. After connecting the AC adaptor to the power cable, plug in the plug of the power cable to an electrical outlet.
3. Set the selector switch on the back of the Ethernet cradle to the port that will be used. Set the switch to “LAN” to use the LAN port or to “USB” to use the USB port.
4. Before using the cradle ports, remove the caps from the ports. When using a LAN, connect one end of the LAN cable to the LAN port and the other end to the PC or hub. When using a USB connection, connect one end of the USB cable (DT-380USB-A) to the USB port and the other end to the PC.
5. Align the contacts on the underside of the DT-X8 with the power supply contacts on the Ethernet Cradle and then set the DT-X8 into the cradle so that mount holes in the back of the DT-X8 are aligned with the mount hooks on the cradle. Once the DT-X8 is properly set in the cradle, the power LED on the front of the Ethernet cradle lights green.

Status of Indicator 1 on DT-X8

Orange	:	Charging
Red	:	Standby due to battery pack error or the surrounding temperature is out of range (charging begins when the temperature is within the correct range.)
Green	:	Charging complete

Notes:

- Always remove the DT-X8 from the Ethernet Cradle before changing the selector switch setting.
- Never short out the power contacts of the cradle. This damages the cradle.
- Do not subject the DT-X8 and cradle to vibration or impact during communication. This results in communication being interrupted.
- When mounting the DT-X8, securely attach it to the mount hooks of the cradle and check that the power LED on the front of the cradle lights green. Charging battery pack or communication will not proceed if it is not mounted properly.
- The LAN and USB connections cannot be used concurrently.
- Always cap ports that are not being used. Using the Ethernet Cradle while the ports are uncapped can cause damage.

5. Connecting the DT-X8 to PC

To make connection establishment with PC, use one of the methods, depending on the OS your PC runs, described below.

- **ActiveSync** (for Windows XP or any other OS earlier)
  Use the ActiveSync to connect the DT-X8 to PC if the PC runs in Windows XP or other OS earlier than Windows XP. The ActiveSync can be downloaded at the URL below.
  http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en

- Windows Mobile Device Center (for Windows Vista or later)
  Use the Windows Mobile Device Center to connect the DT-X8 to PC if the PC runs in Windows Vista OS. The Windows Mobile Device Center ("WMDC") can be downloaded at the URL below.
  http://www.microsoft.com/downloads/details.aspx?familyid=46F72DF1-E46A-4A5F-A791-09F07AAA1914&displaylang=en

5.1 ActiveSync Connection via USB

If you have already installed ActiveSync and connected the DT-X8 to the PC via direct USB, You may skip Chapter 5.1.1. You already have the USB driver and ActiveSync in your development environment. If you do not yet have the cradle driver on your PC, download the USB driver files “wceusbsh.inf” and “wceusbsh.sys” from the CASIO web site and copy them to an appropriate folder.

5.1.1 Installing ActiveSync for the First Time

1. Install ActiveSync first. Run the ActiveSync ‘msi’ file.

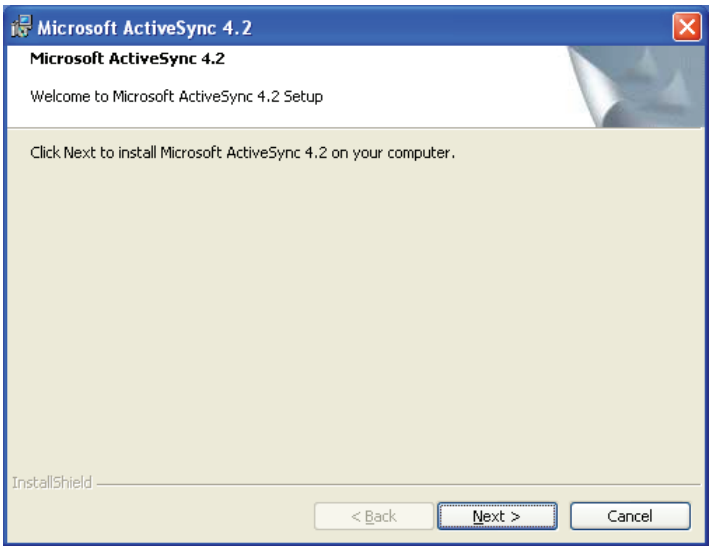
Microsoft ActiveSync 4.2
Microsoft ActiveSync 4.2
Welcome to Microsoft ActiveSync 4.2 Setup
Click Next to install Microsoft ActiveSync 4.2 on your computer.
InstallShield
< Back
Next >
Cancel

Figure 5.1

2. Click **Install** button.

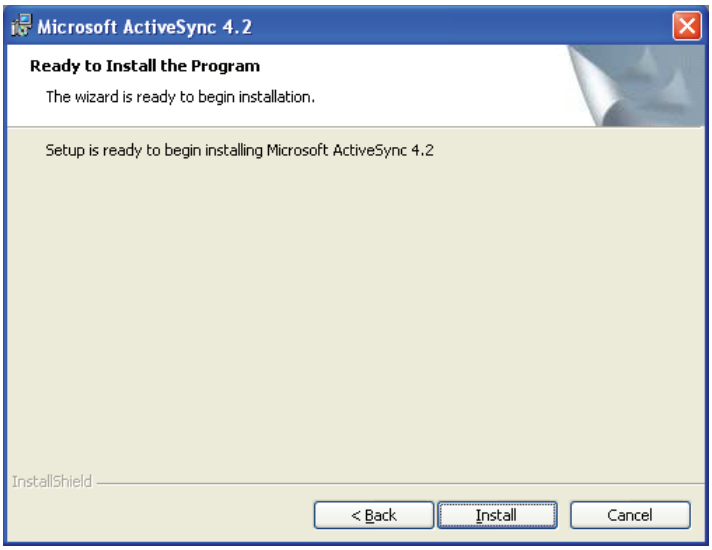

Figure 5.2

3. Pause the installation when the menu in Figure 5.3 is displayed; you have to install the driver at this point.

Get Connected
Get Connected
To connect your device to this PC:
1. Connect the cable to the PC
2. Turn on the device
3. Place the device in its cradle
ActiveSync should automatically detect your device.
If your device is not automatically detected, click Next.
If you are using infrared (IR) or Bluetooth, click Help.
< Back
Next >
Cancel
Help

Figure 5.3

4. Connect the USB cable to the PC and the other end to the USB Cradle and also the AC adaptor to the USB Cradle.
5. Put the DT-X8 on the cradle and confirm that the green LED on the front of the cradle is lit. If not, be sure the DT-X8 is positioned firmly on the cradle.
6. When the DT-X8 is mounted on the USB Cradle, a dialog is displayed to prompt you to install the suitable driver. If you have not yet obtained the driver files, see page 16 for detail of what you need to download.
7. Choose **No, not this time** radio button in Figure 5.4 and then click **Next >** button.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

Figure 5.4

8. Then, choose **Install from a list or specific location [Advanced]** radio button in the menu.

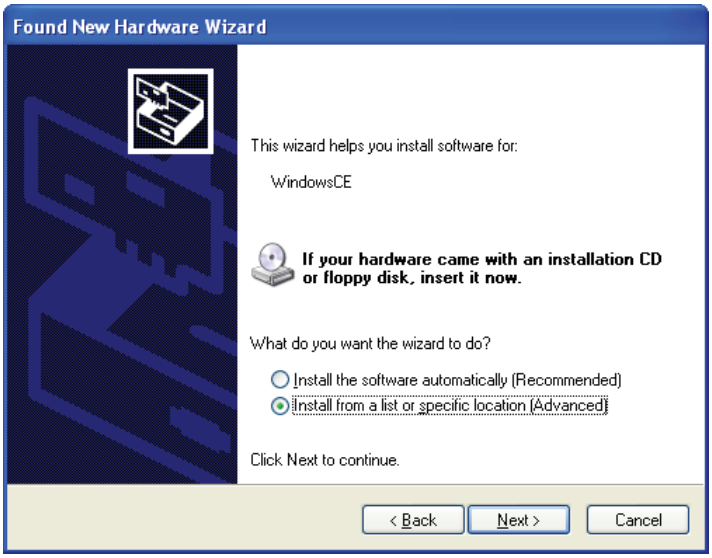
Found New Hardware Wizard
This wizard helps you install software for:
WindowsCE
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

Figure 5.5

9. Click **Next >** button.

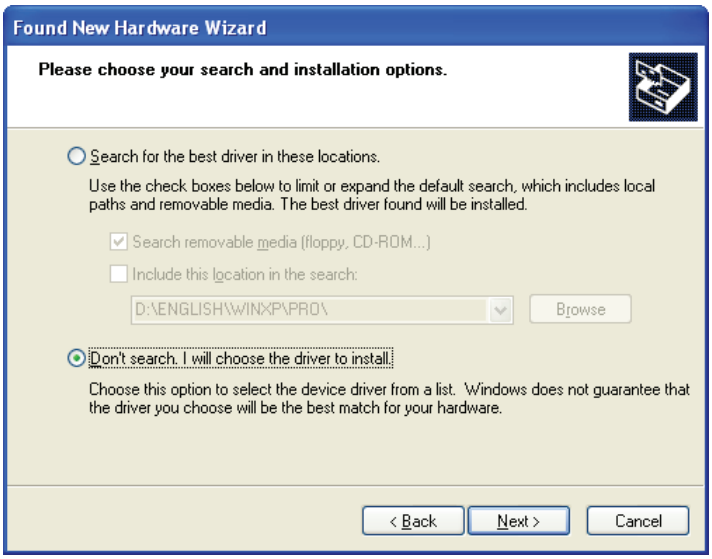
Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
D:\ENGLISH\WINXP\PRO\
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

Figure 5.6

10. Choose **Windows CE USB Devices** icon.

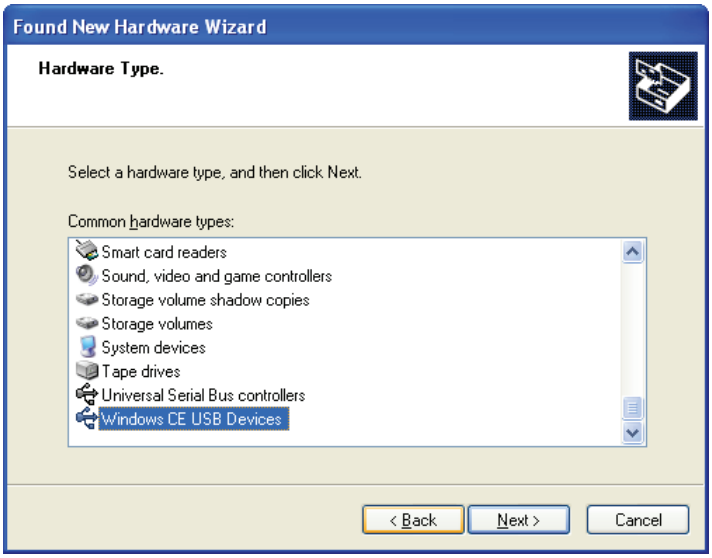

Figure 5.7

11. Click **Have Disk…** button.

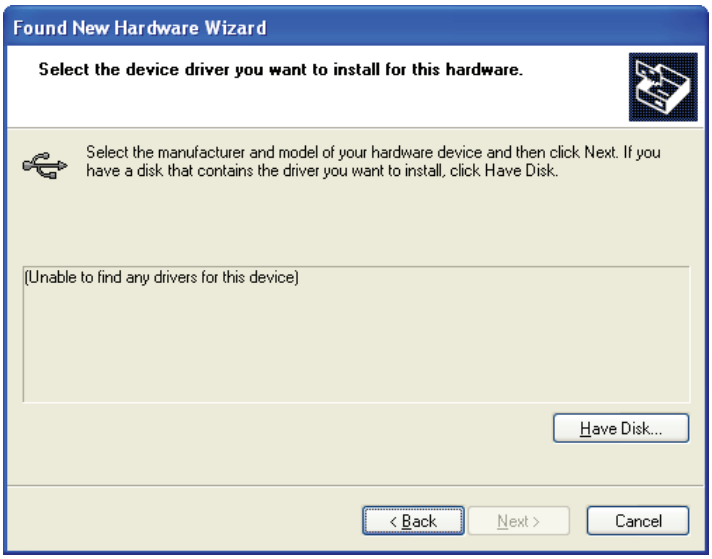
Found New Hardware Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
(Unable to find any drivers for this device)
Have Disk...
< Back
Next >
Cancel

Figure 5.8

12. Click **Browse…** button. Select “wceusbsh.inf” from the folder you created in step 6.

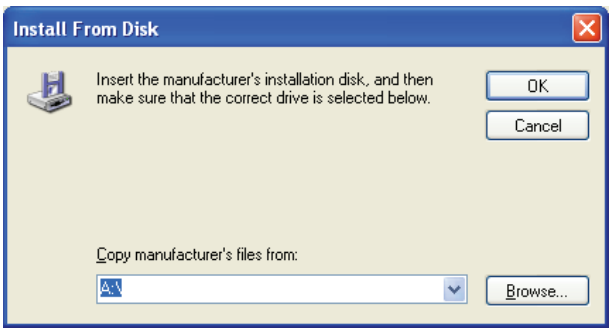

Figure 5.9

13. The installation of the driver will start.

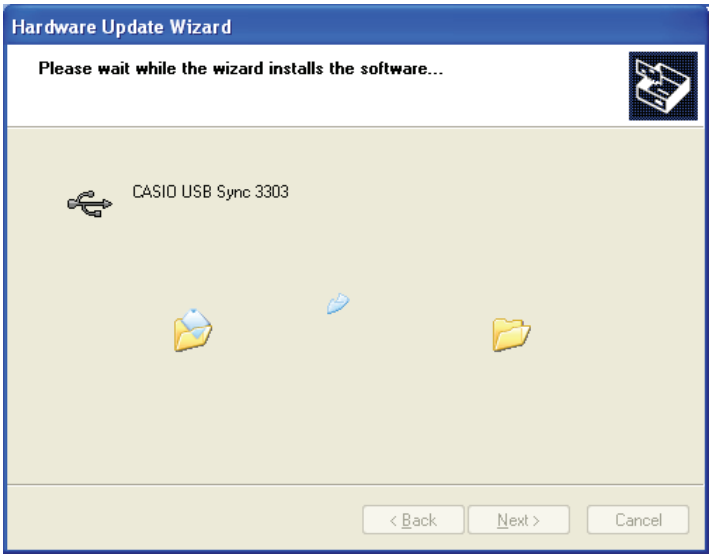

Figure 5.10

14. Click **Continue Anyway** button.

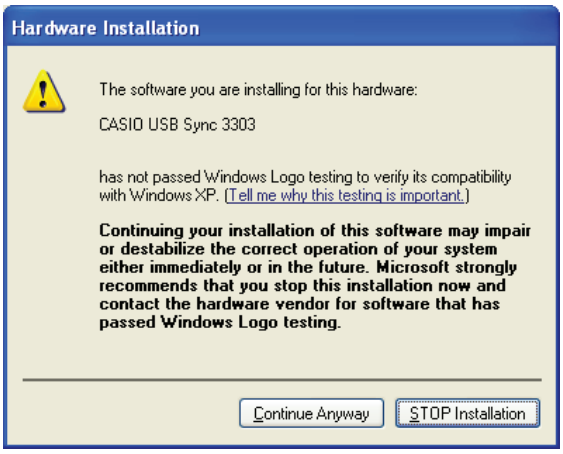
Hardware Installation
The software you are installing for this hardware:
CASIO USB Sync 3303
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

Figure 5.11

15. A menu might be displayed to prompt you to install “wceusbsh.sys”. This happens if “wceusbsh.sys” is not in the same folder as “wceusbsh.inf”. Download this file from the CASIO Web Site and follow the prompts to specify the location of “wceusbsh.sys”.

16. Now the installation of the driver is finished.

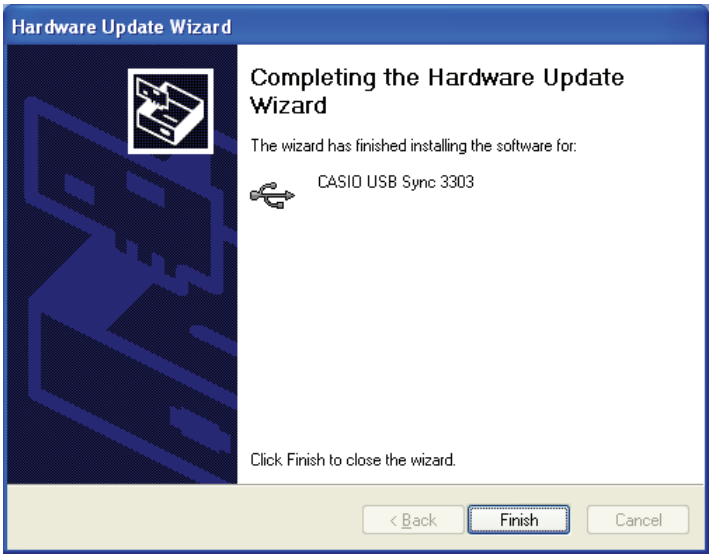

Figure 5.12

17. Now go back to the ActiveSync Installation Wizard that you left on the desktop. Click **Next >** button.

Get Connected
Get Connected
To connect your device to this PC:
1. Connect the cable to the PC
2. Turn on the device
3. Place the device in its cradle
ActiveSync should automatically detect your device.
If your device is not automatically detected, click Next.
If you are using infrared (IR) or Bluetooth, click Help.
< Back
Next >
Cancel
Help

Figure 5.13

18. Now the connection is established. You can choose either partnership option according to your needs. Then click **Next >** button.

New Partnership
Set Up a Partnership
Before you can synchronize information between your mobile device and this computer, you must set up a partnership between them.
Would you like to set up a partnership?
Yes
Set up a partnership so that I can synchronize information between my device and this computer.
No
I don't want to synchronize information. Set up my device as a guest so that I can copy or move information between my device and this computer.
< Back
Next >
Cancel
Help

Figure 5.14

19. Now the connection is completed. You can start up Visual Studio and create a program and deploy it to the DT-X8.

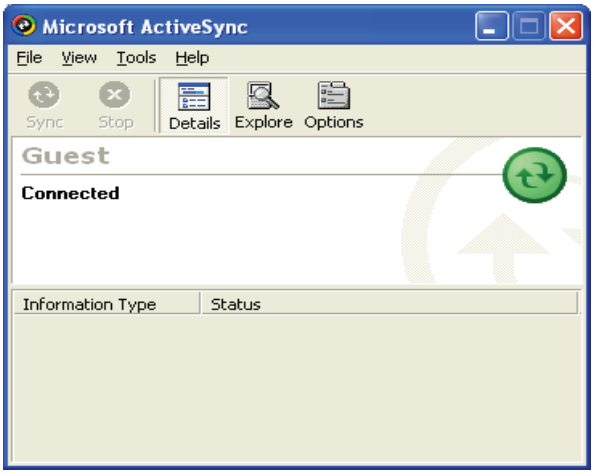

Figure 5.15

5.1.2 If ActiveSync Is Already Installed

This is the procedure if ActiveSync is already installed on the PC. You just need to let the PC recognize the DT-X8 and install the cradle driver as in steps 6 to 16 in Chapter 5.1.1.

1. Navigate to **File → Connection Settings….** from the menu in ActiveSync. See Figure 5.16.

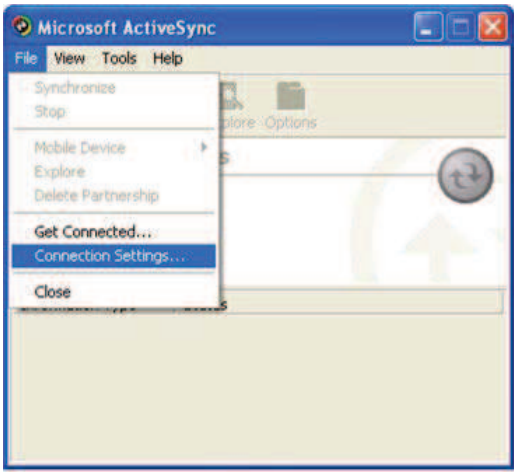

Figure 5.16

2. Check **Allow USB connection with this desktop computer. USB is available**.

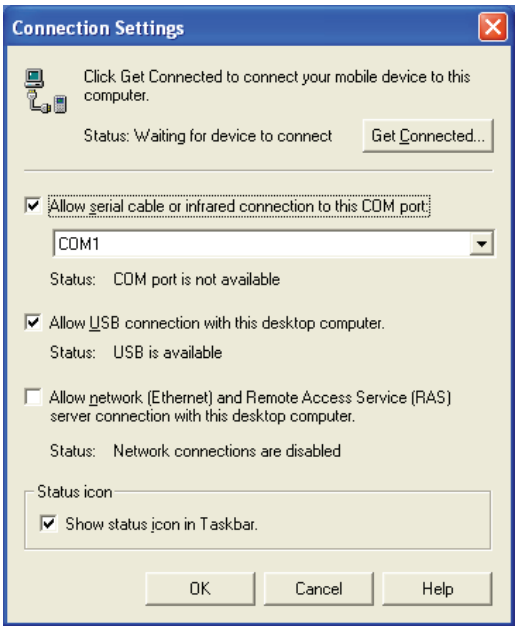
Connection Settings
Click Get Connected to connect your mobile device to this computer.
Status: Waiting for device to connect
Get Connected...
Allow serial cable or infrared connection to this COM port
COM1
Status: COM port is not available
Allow USB connection with this desktop computer.
Status: USB is available
Allow network (Ethernet) and Remote Access Service (RAS) server connection with this desktop computer.
Status: Network connections are disabled
Status icon
Show status icon in Taskbar.
OK
Cancel
Help

Figure 5.17

3. On the DT-X8, in **Control Panel**, choose the **PC Connection** option. Confirm that PC Connection is set to “USB Default”. If not, choose ‘**USB Default’** and tap **OK** button.

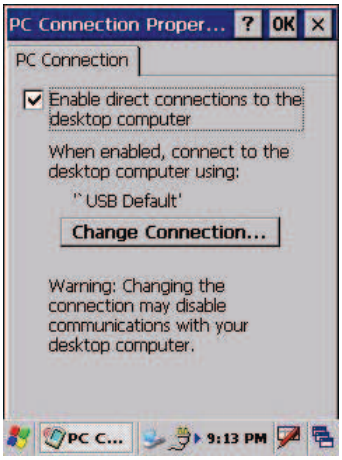
PC Connection Proper...
OK
PC Connection
Enable direct connections to the desktop computer
When enabled, connect to the desktop computer using:
'USB Default'
Change Connection...
Warning: Changing the connection may disable communications with your desktop computer.
PC C...
9:13 PM

Figure 5.18

4. When the DT-X8 is mounted on the USB Cradle, a menu to prompt to install the driver is displayed. Follow the same steps in Chapter 5.1.1.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

Figure 5.19

5.2 USB Connection via Windows Mobile Device Center

To establish connection via USB interface with PC runs in Windows Vista, use Windows Mobile Device Center (“WMDC”). The DT-X8 with the factory-setting (default) does not support the WMDC. Follow the procedure below to change the setting on the DT-X8.

Procedure

1. Close all applications running on the DT-X8.
2. Navigate to **Settings** → **Control Panel** → **USB Connection**.
3. Click **Connect Utility** tab.

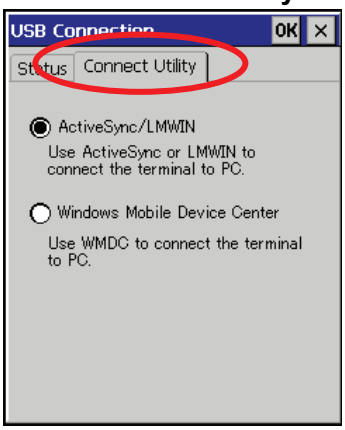

Figure 5.20

4. Choose **Windows Mobile Device Center** radio button and then click **OK** button.

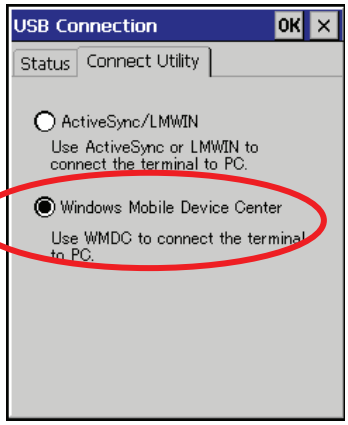

Figure 5.21

5. A dialogue asking your final confirmation appears. Click **YES** button.

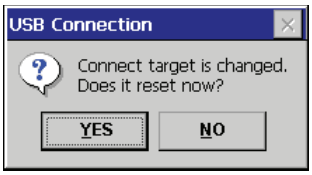

Figure 5.22

6. The DT-X8 starts up again.
7. Mount the DT-X8 on the cradle, and then follow a message appeared in the WMDC on the PC.

Notes:

- To resume the factory default setting, choose **ActiveSync/LMWIN** radio button in Step 3 on the previous page (see Figure 5.20), and start up the DT-X8 again.
- The WMDC version 6.1 or later will support the connection establishment via USB interface. Any other versions of the WMDC earlier are not interoperable with Windows CE devices including the DT-X8 series.

5.3 Connection via WLAN

To establish communication between the DT-X8 with the WLAN module integrated (see Table 2.1 for the applicable models) and PC via WLAN configuration, follow the steps, 1 to 6, below to set up a WLAN configuration on the DT-X8. After setting up the configuration, be sure to perform a site survey prior to starting communication via WLAN.

1. Navigate to **Start** → **Settings** → **Ctrol Panel** → **WLANConfig** and then click **IP** tab.

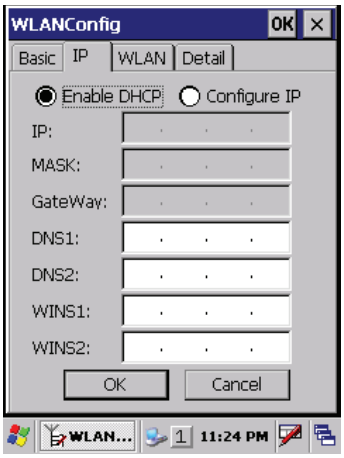

Figure 5.23

Table 5.1

Parameter	Description
Enable DHCP or Configure IP	Determines "Enable" or "Disable" for DHCP.
IP	Determines IP address.
MASK	Determines subnet mask.
GateWay	Determines default gateway.
DNS1	Determines primary DNS address.
DNS2	Determines secondary DNS address.
WINS1	Determines primary WINS address.
WINS2	Determines secondary WINS address.

If any of the settings in Figure 5.23 is omitted, the process described in the following table will automatically take place in the field.

Table 5.2

Parameter	Nothing is set (DHCP)	"Configure IP" is set
Enable DHCP or Configure IP	"Enable DHCP" is assumed.	"Configure IP" is set.
IP	Does not determine IP address.	Entered address is set as is.
MASK	Does not determine subnet mask.	Entered address is set as is.
GateWay	Does not determine gateway.	Entered address is set as is.
DNS1	Does not determine primary DNS address.	Entered address is set as is.
DNS2	Does not determine secondary DNS address.	Entered address is set as is.
WINS1	Does not determine primary WINS address.	Entered address is set as is.
WINS2	Does not determine secondary WINS address.	Entered address is set as is.

2. Click **Basic** tab. Set up each parameter in the tab by referring to the descriptions for the parameters in Table 5.3.

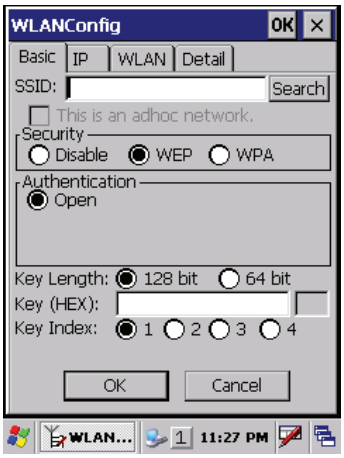

Figure 5.24

Table 5.3

Parameter		Description
SSID		Enter the SSID of the network you want to connect to.
Security	Disable	None.
	WEP	**Open** in Authentication field.
	WPA	**PSK** in Authentication field (if selected, the Key field must be set also.) **EAP-PEAP** in Authentication field **EAP-TLS** in Authentication field
Key		Enter 26 (maximum) alphanumeric digits (13 hex pairs) in the Key field if **128 bit** radio button is selected. Or, enter 10 (maximum) alphanumeric digits (5 hex pairs) in the Key field if **64 bit** radio button is selected. The field displays the number of characters that have been entered. ***** in the field implies that the key has been extracted from the ini file. If ***** in the field is edited, a new key has been deemed to be set. Or, if it has never been edited, the key extracted from the ini file becomes effective as is.

If **EAP-PEAP** radio button in Authentication field is selected, click the **EAP-Properties** button that appears when selecting the **EAP-PEAP** radio button to set also the following parameters.

Table 5.4

Parameters in EAP-Properties screen	Description	Default
User name	Input a user name in alphanumeric (maximum 100 alphanumeric).	None
Password	Input a password in alphanumeric (maximum 100 alphanumeric). ***** in the field implies that the password has been extracted from the ini file. If ***** in the field is edited, a new password has been deemed to be set. Or, if it has never been edited, the password extracted from the ini file becomes effective as is.	None
Domain	Input a domain in alphanumeric (maximum 100 alphanumeric).	None
Validate server certificate	Set up the requisition for server certificate. With check mark : certificate is required. Without check mark: certificate is not required.	Certificate is not necessary

If **EAP-TLS** radio button in Authentication field is selected, click the **EAP-Properties** button that appears when selecting the **EAP-TLS** radio button to set the following settings.

Table 5.5

Parameters in EAP-Properties screen	Description	Default
User name	Input a user name in alphanumeric (maximum 100 alphanumeric).	None
Certificate	Select a client certificate installed already (maximum 100 alphanumeric). **Search** button in the field will display a list of installed client certificates. Select one by highlighting it.	None
Domain	Input in alphanumeric (maximum 100 alphanumeric)	None
Validate server certificate	Set up the requisition for server certificate. With check mark : certificate is required. Without check mark : certificate is not required.	Certificate is required.

3. Click **WLAN** tab.

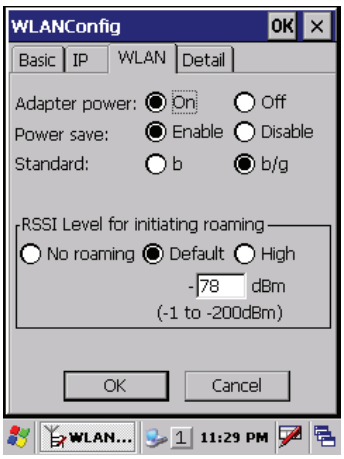

Figure 5.25

Table 5.6

Field / Radio Buttons	Description		Default
Adapter power	On	Enable power to the integrated WLAN module.	Yes
	Off	Disable power to the integrated WLAN module.	
Power save	Enable	Enable power save mode for the WLAN module.	Yes
	Disable	Disable power save mode for the WLAN module.	
Standard	b	Set up IEEE802.11b standard effect.	
	b/g	Set up IEEE802.11b/g standard effect.	Yes
RSSI Level for initiating roaming	No roaming	Set up "-100 dBm" for roaming starting threshold level, a level where communication via WLAN is practically impossible, so that roaming should not be carried out.	
	Default	Set up "-78 dBm" for the roaming starting threshold level.	Yes
	High	Set up "-72 dBm" for roaming starting threshold level, for faster (more frequent) roaming	

4. Click **Detail** tab.

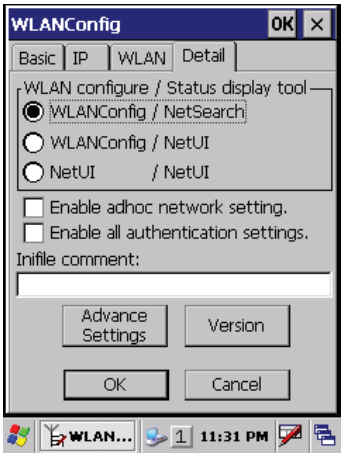

Figure 5.26

Table 5.7

Field / Radio Buttons		Description	Default
WLAN configure, Status display tool	WLANConfig, NetSearch	- Use only CASIO provided WLAN tool. - Configure WLAN setting with settings extracted from the ini file. - Initiate NetSearch when tapping the icon in the task tray.	Yes
	WLANConfig, NetUI	- Use both CASIO provided WLAN tool and MS tool. - Configure WLAN setting with settings extracted from the ini file. - Initiate NetUI (MS tool) when tapping the icon in the task tray.	
	NetUI/NetUI	- Use only the MS tool. - Configure WLAN setting, not with settings extracted from the ini file. - Initiate NetUI when tapping the icon in the task tray. If this radio button is selected and the **OK** button that appears in the subsequent popup warning message is clicked, other settings in the ini file will be deleted. Only the WLAN configuration set with NetUI is saved.	
Enable AdHoc network setting		With check mark : enable the setting.	
		Without check mark : disable the setting.	Yes
Enable all authentication settings		With check mark : enable the setting.	
		Without check mark : disable the setting.	Yes
Inifile comment		Enter a comment of up to 100 characters to be written in the ini file.	None

5. If **OK** button in the popup warning message (see Table 5.7 for description of NetUI/NetUI radio button) is clicked, the screen in Figure 5.27 appears. Click **OK** button to perform a reset on the terminal so that the setting takes effect.

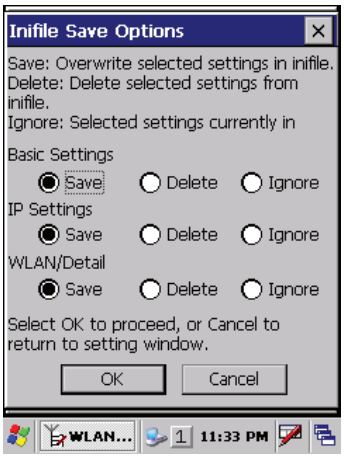

Figure 5.27

6. Check to make sure that the connection has been established using the **NetSearch** utility, and then navigating to the **Ping** function in there. Enter HostName first and then click **Ping** to check that you are connected to the network correctly.

5.4 Connection via Ethernet Cradle

This chapter describes how to establish a high speed LAN connection on the WLAN non-integrated models with HA-K62IO Ethernet cradle.

Follow the steps below:

1. Connect the dedicated AC adapter to the Ethernet cradle as described in Chapter 4.2.
2. Connect one end of the network cable to the Ethernet cradle and the other end to the network hub.
3. Make sure the selector switch on the back of the HA-K62IO Ethernet cradle is set to the position "LAN".
4. Place the DT-X8 in the cradle and navigate to **Start** → **Settings** → **Control Panel** → **Network and Dial-up Connections**.
5. The following screen appears. Double click the **AX887721** icon. The icon will not appear unless the terminal is placed in the cradle.

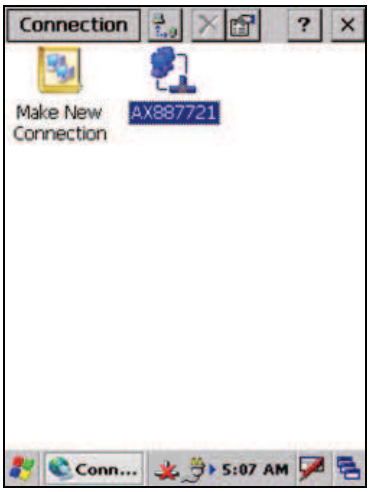

Figure 5.28

6. The following TCP/IP screen appears. Set up all the parameters in **IP Address** and **Name Servers** tabs as required and click **OK** button.

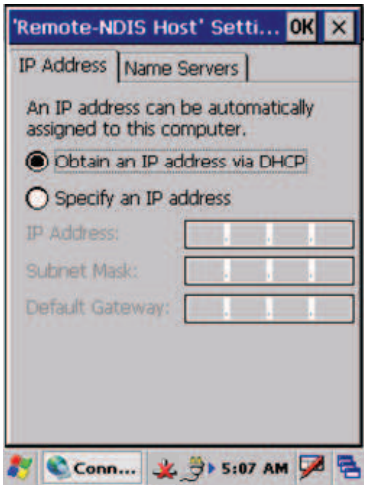

Figure 5.29

7. If the connection is established correctly, the icon ( ) in the Taskbar changes to ( ).

5.5 Accessing Shared Network Drive on Your LAN

Assuming you have a valid network connection established, you can access shared drives on your PC from the **File Explorer** on the DT-X8. The following shows the steps to initiate this.

1. Configure a network connection on the DT-X8.
2. Double click My Computer.
3. Type \\xxxx\ where xxxx is the network name of the PC.
4. A network logon dialog box will appear. Enter a valid User ID, Password and Network Domain.
5. Any shared network drives on the target PC will be displayed and you will be able to copy files freely between them and the DT-X8.

5.6 Direct TCP/IP Connection from Visual Studio

If you have a network connection to the DT-X8 (for example, via WLAN or the Ethernet cradle) then you can establish a direct link to the development PC without using ActiveSync.

For Visual Studio 2005

1. Download the files listed below to the DT-X8.
   - Clientshutdown.exe
   - ConmanClient2.exe
   - CMAccept.exe
   - DeviceDMA.dll
   - eDbgTL.dll
   - TcpConnectionA.dll

   The source folder in the PC:
   C:\Program Files\Common Files\Microsoft Shared\CoreCon\1.0\Target\wce400\armv4i
   The destination folder in the DT-X8:
   \Windows

2. Run **ConmanClient2.exe** on the DT-X8.
3. Set the device IP address in Visual Studio 2005.
4. Navigate to **Tools** in the main menu of Visual Studio 2005 → **Options…** → **Device Tools** → **Devices**.
5. Choose **DT-X8 Device** in the pull-down menu of **Devices:** and click **Properties…**.
6. Click **Transport:** to access **Configure…** and set up **Device IP address** as shown in Figure 5.30.

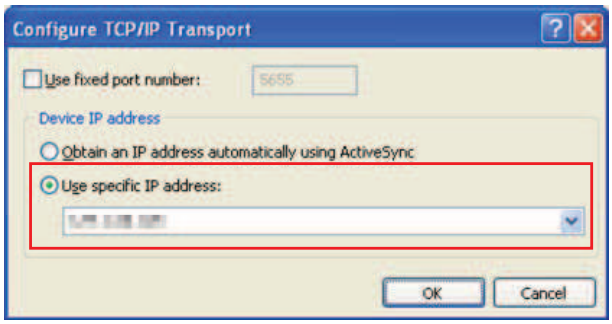

Figure 5.30

7. Run CMAccept.exe on the DT-X8.
8. Navigate to **Tools** in the main menu of Visual Studio 2005 → **Connect to Device…**.

9. Choose **DT-X8 Device** in the list of **Devices:** and click **Connect** button. The screen in Figure 5.31 if appear indicates the success of connection establishment.

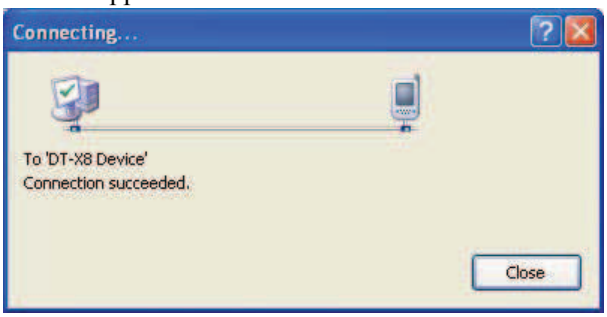

Figure 5.31

6. Setting Up the Development Environment

6.1 Installing CAB Files

1. After installing the library files, the CAB files in Table 6.1 will be installed in the folder below.

   C:\Program Files\CASIO\MBSYS\CAB

Table 6.1

Library	CAB file	Preinstalled
System Library	en_SystemLib.ARMV4I.CAB	Yes
Laser Scanner Library	en_OBReadLib.ARMV4I.CAB	Yes
Bluetooth Library	en_BluetoothLib.ARMV4I.CAB	Yes
Imager Library	en_ImagerLib.ARMV4I.CAB	Yes
JPEG library	enJPEG.ARMV4I.CAB	Yes
FLINK library	en_Flink.ARMV4I.CAB	Yes (note 2)
NFC Library	en_NFCLib.ARMV4I.CAB	Yes

Notes:

1. The library with "Yes" in "Preinstalled" column is preinstalled in the DT-X8 and in the Device Emulator. Thus, it is not necessary to install it, unless it has been updated or changed.
2. The CAB file, en_Flink.ARMV4I.CAB, in the table does not operate for the DT-X8. Use the FlinkLib.dll installed by default in the terminal.

2. Copy all the CAB files in Table 6.1 to any folder on the DT-X8 via ActiveSync.
3. Carry out each CAB file.
4. When the installation starts, the installation status will appear.

6.2 Visual Studio 2005

Follow the steps in Chapter 5 “Connecting the DT-X8 to PC” before checking the steps below to confirm that you can connect to the DT-X8 from Visual Studio 2005.

1. Establish connection with the DT-X8 via ActiveSync.
2. Open the application project for VB or C# in Visual Studio 2005.
3. Click the button shown in the red box below (see Figure 6.1) to make sure that Visual Studio 2005 has recognized the connection established with the DT-X8 via ActiveSync. If it does not, start up ActiveSync again to establish connection.

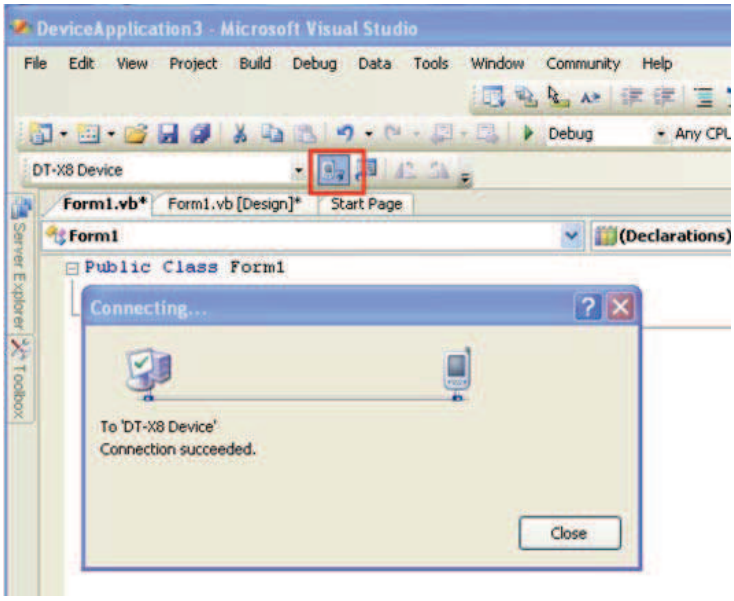

Figure 6.1

4. Choose **DT-X8 Device** in the pull-down menu box.

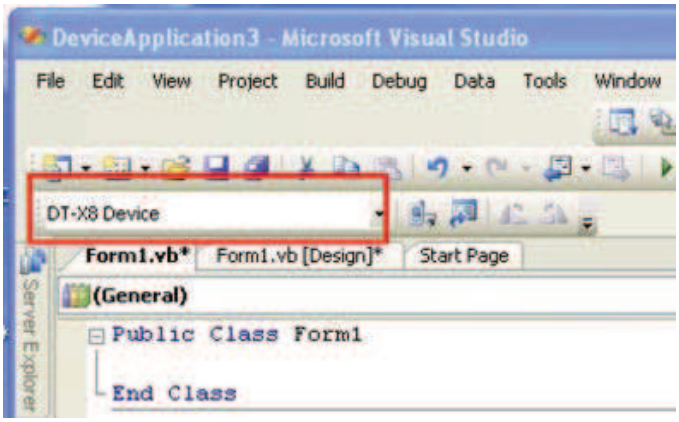

Figure 6.2

5. You will now be able to deploy solutions and also debug applications on the attached DT-X8 using the Visual Studio 2005 debugging features.

7. Device Emulator

The **Device Emulator** provides application developers with an environment that, without having the actual terminal available, allows them to debug basic functions and performance of an application at source level by stepping through the code.

7.1 Software Required

The **Device Emulator** requires the software(s) listed below before installing the emulator.

- ActiveSync 4.2 or a later version (If required)
  http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en
- Visual Studio 2008 or Visual Studio 2005 (Required)
- CASIO DT-X8 BDK (Required)
- Standalone Device Emulator 3.0 (Optional. See notes 1 and 2.)
  http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=a6f6adaf-12e3-4b2f-a394-356e2c2fb114

Notes:

1. To use Microsoft Device Emulator 3.0, follow the steps below.
   - Install DT-X8 ExportSDK and Device Emulator of the DT-X8 BDK.
   - Download Microsoft Device Emulator 3.0 and install it.
   - Edit the following file and save the changes made.
     C:\Program Files\Windows CE Tools\wce600\DT-X8\Emulation\DT-X8.cdes

     Before you change, the default parameter in the file is described as follows.

     ```
     module=DevEmu500.exe
     ```

     Change the parameter to the one below. Be sure to describe the whole parameter in single one line.

     ```
     module=C:\Program Files\Microsoft Device Emulator\1.0\
     DeviceEmulator.exe
     ```

     You can substitute the Device Emulator Version 3.0 released in Visual Studio 2008 for an engine of Device Emulator included in the DT-X8 BDK by the mentioned procedure above.

2. If you use Microsoft Device Emulator 3.0, you can save the status of the Device Emulator. After the steps in Note 1 in the previous page, change the settings in "DT-X8.cdes" as follows.

   Before you change, the parameter in the file is as follows.

```
others=/sharedfolder "C:\Documents and Settings\All
Users\Application Data\CASIO\Emulator\Ctrl" /vmname "DT-X8 Emulator"
```

   Change the parameter to the one below. Be sure to describe the whole parameter in single one line.

```
others=/sharedfolder "C:\Documents and Settings\All Users\Application
Data\CASIO\Emulator\Ctrl" /vmname "DT-X8 Emulator" /defaultsave
```

Case of using after Windows Vista OS

If you use OS after Windows Vista (Windows 7 or Windows Server 2008), please set device emulation and I/O simulator as administrator.
Please check “Run this program as an administrator” of property from opening Explorer.
(Ex. Execute I/O simulator in Windows Vista as administrator.)

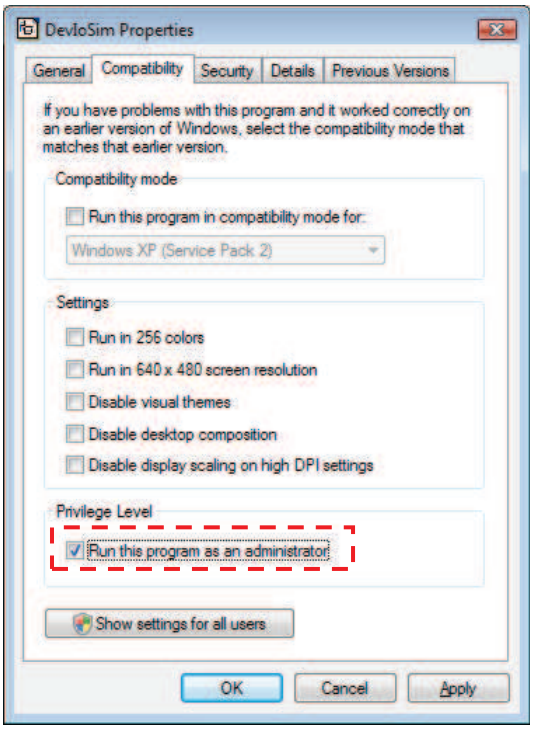
DevIoSim Properties
General
Compatibility
Security
Details
Previous Versions
If you have problems with this program and it worked correctly on an earlier version of Windows, select the compatibility mode that matches that earlier version.
Compatibility mode
Run this program in compatibility mode for:
Windows XP (Service Pack 2)
Settings
Run in 256 colors
Run in 640 x 480 screen resolution
Disable visual themes
Disable desktop composition
Disable display scaling on high DPI settings
Privilege Level
Run this program as an administrator
Show settings for all users
OK
Cancel
Apply

Figure 7.1

These program have installed the following location as default setting.

- Device emulator
  C:\Program Files\Microsoft Device Emulator\1.0\DeviceEmulator.exe
- I/O simulator
  C:\Program Files\Common Files\CASIO\Emulator\DevIoSim.exe

7.2 Starting Up the Device Emulator

After installing all required software described in Chapter 7.1, follow the steps below to start up the **Device Emulator** on your PC.

1. Navigate to Start menu → **All Programs** → **CASIO Device Emulator** and click **DT-X8**.
2. Make sure that the DT-X8 **Device Emulator** has started up on the screen. See Figure 7.2.
3. Navigate to Start menu → **All Programs** → **CASIO Device IO Simulator** and click **IO Simulator**.
4. Make sure that the **IO Simulator** has started up on the screen. See Figure 7.3.
5. If both Figure 7.2 and Figure 7.3 appear on your PC, you are ready to use the emulator.

Note.
If do not appear "**DT-X8**" in "**CASIO Device Emulator**", please execute "**Add Device**".
If you use OS after Windows Vista, please execute "DevEmuLoader.exe" as administrator by referring " Case of using after Windows Vista OS" section.

C:\Program Files\Common Files\CASIO\Emulator\DevEmuLoader.exe

Figure 7.2 DT-X8 Device Emulator

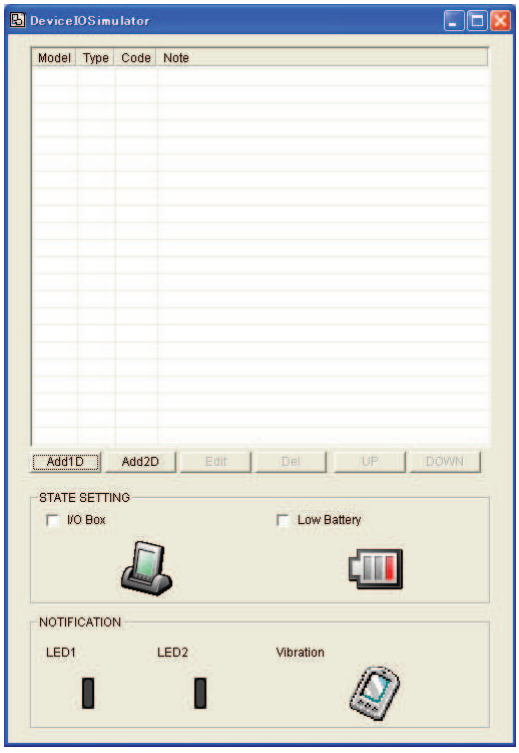

Figure 7.3 I/O Simulator

Terminology of **Emulator** and **Simulator**;
The **Emulator** described in this reference manual is a software application that behaves in a very similar way to the actual device by imitating individual hardware components or protocols present in the actual hardware.
On the other hand, the **Simulator** is also a software application that logically integrates application programming interfaces ("API") and certain other functions to allow debugging of the application program using external events. The **Emulator** performs in a pseudo CPU and hardware environment and it is impossible for the application to recognize whether it is in the actual device

environment or pseudo environment. However, actions carried out by the **Simulator** are not as alike to those performed by actual components but merely mimic them very closely.

7.3 Using the Device Emulator

7.3.1 DT-X8 Device Emulator

The **DT-X8 Device Emulator** emulates various operations carried out by the actual DT-X8 device on the PC's screen such as mouse operation, input on PC's keyboard, displaying execution of applications, and operations by actual devices such as the scanner. Figure 7.4 shows an emulated DT-X8 device on the screen of a PC.

Figure 7.4

Key Input

The emulator offers key input capability similar to that of the actual DT-X8 device. For instance, a key on the emulated keyboard of DT-X8 on the screen (see Figure 7.4) can be clicked with the PC mouse as well as key input made directly on the PC's keyboard.

Reading Bar Codes

The emulator enables bar codes pre-registered in the I/O Simulator (see Figure 7.3) to be input when clicking Trigger key on the emulated keyboard (see Figure 7.4). Note however that the Trigger key must be continuously pressed for a second or more otherwise an incorrect key input may result.

Sound

The emulator offers beep and sound capability similar to that of the actual DT-X8 device.

7.3.2 I/O Simulator

The I/O Simulator simulates registration of bar codes, generation of low battery warning, detection of terminal being mounted on the cradle.

Registration of bar code symbologies

1. Registration
   Click **ADD1D** or **ADD2D** button (circled in red in Figure 7.4) to go into the bar code registration mode.

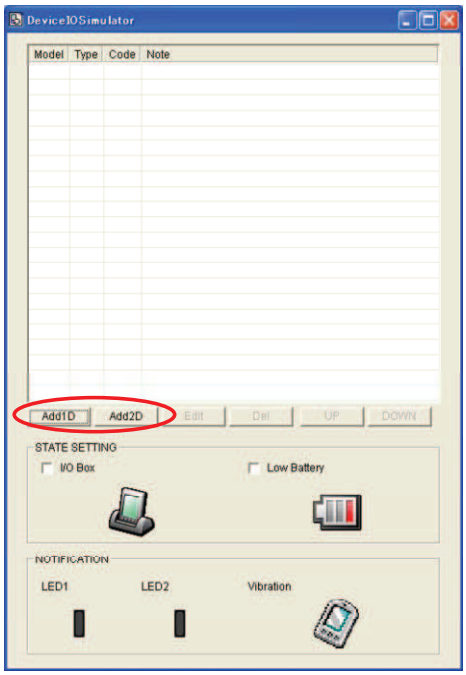

Figure 7.5

2. Bar code registration
   Choose a bar code symbology in the **Code Type** pull-down menu that you wish to register in the **I/O Simulator**.

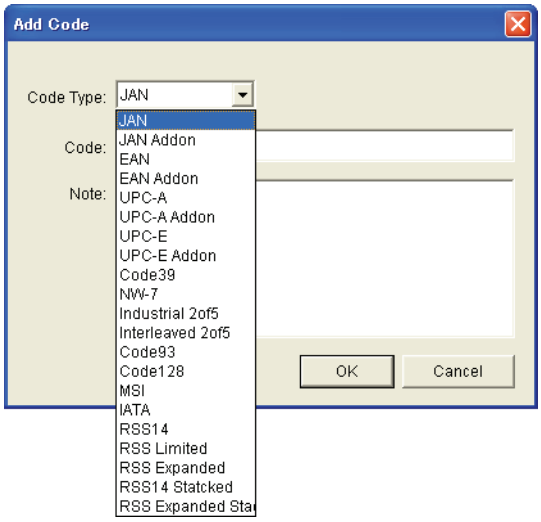

Figure 7.6

3. Registration of bar code and note

   Enter bar code data in the **Code** field (see Figure 7.7) and a note about the bar code in the **Note** field if necessary. Click **OK** button to complete the bar code registration.

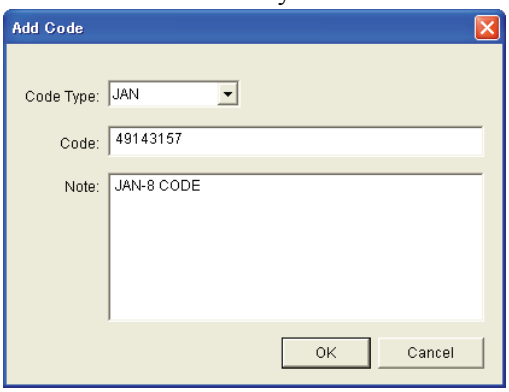

Figure 7.7

4. Completion of registration

   After completion of the bar codes registration, the screen in Figure 7.8 shows a list of bar codes that have been registered in the **I/O Simulator**. Prior to debugging with the **Device Emulator**, make sure that you register all bar codes you wish to use in debugging.

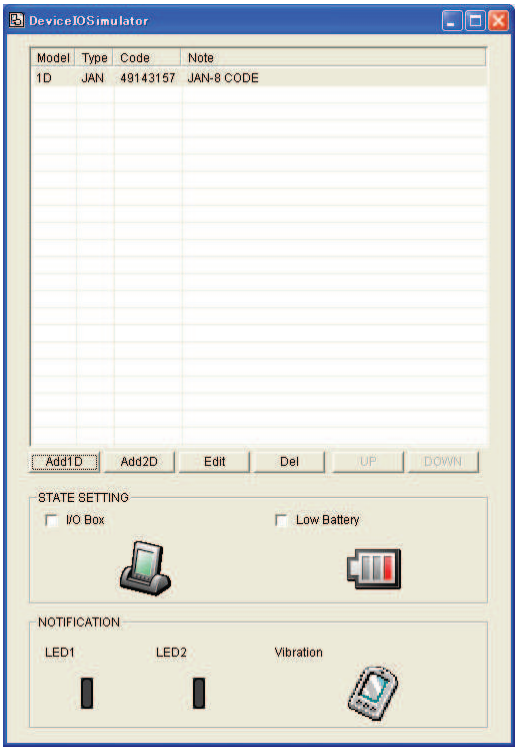

Figure 7.8

5. Editing registered bar code content
   Highlight a bar code in the list of registered bar codes (see Figure 7.8) and click **Edit** button. Figure 7.9 appears for editing the bar code and its information.

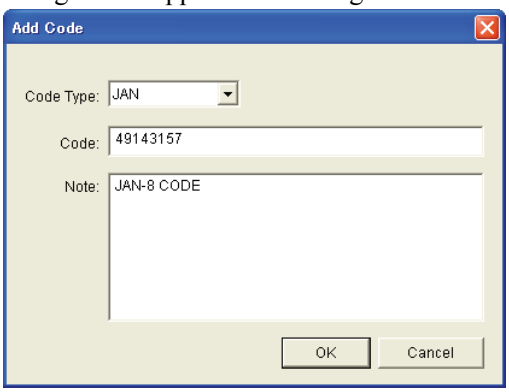

Figure 7.9

6. Deleting registered bar code content
   Highlight a bar code in the list of registered bar codes (see Figure 7.8) and click the **Del** button. Dialogue screen in Figure 7.10 appears for you to confirm the deletion. If it is okay to delete, click **Yes** button, otherwise click **No** button.

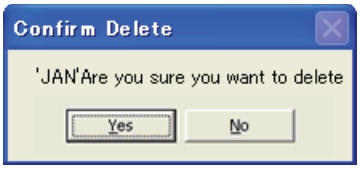

Figure 7.10

Detection of Terminal in Cradle and Low Battery Warning

If you check the **I/O Box** and **Low Battery** boxes in STATE SETTING field (see Figure 7.11), the simulator simulates the respective events in the emulator.

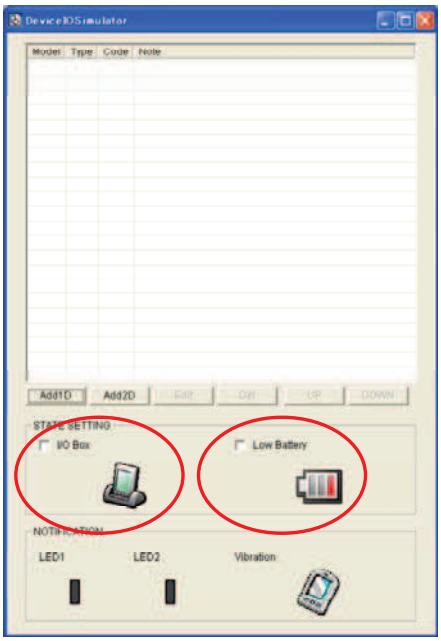

Figure 7.11

I/O Box

If this box is checked, a notification is issued that the connection between the DT-X8 **Device Emulator** and cradle has been established. This notification can be utilized by the application.

Low Battery

If this box is checked, a notification that a low battery state has occurred is raised. The icon in the Toolbar in the emulated screen appears too. The notification can be utilized by the application to recognize the low battery state in the hardware.

Indications

The I/O Simulator expresses a change of state that occurred in the DT-X8 **Device Emulator**.

- LED

When the DT-X8 **Device Emulator** turns on the LED, the LED icon (LED2) in the I/O Simulator also turns on. See Figure 7.11.

- Vibration

When the DT-X8 **Device Emulator** vibrates, the vibration icon in the I/O Simulator also turns on. See Figure 7.11.

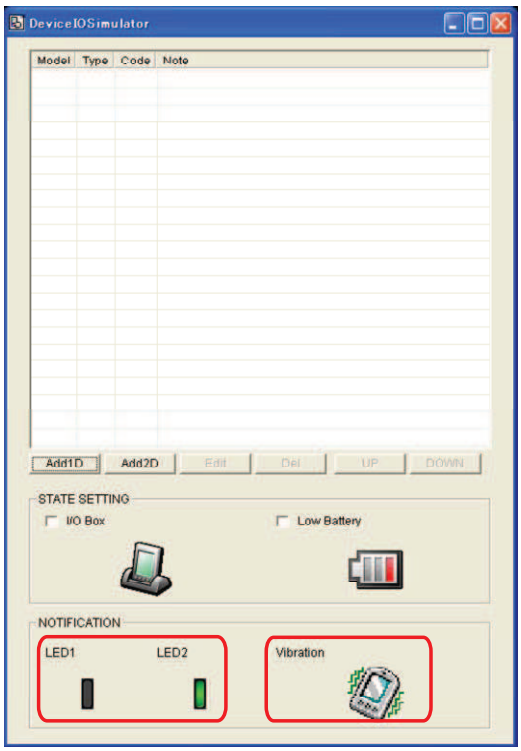

Figure 7.12

7.3.3 Connecting via ActiveSync

If debugging with the **Device Emulator** is carried out in Visual Studio 2008 or Visual Studio 2005, or transmission/reception of a file with the **Device Emulator** is carried out, **ActiveSync** must be used.

Setting ActiveSync

1. Start up **ActiveSync** and then navigate to **File** → **Connection Settings …**.

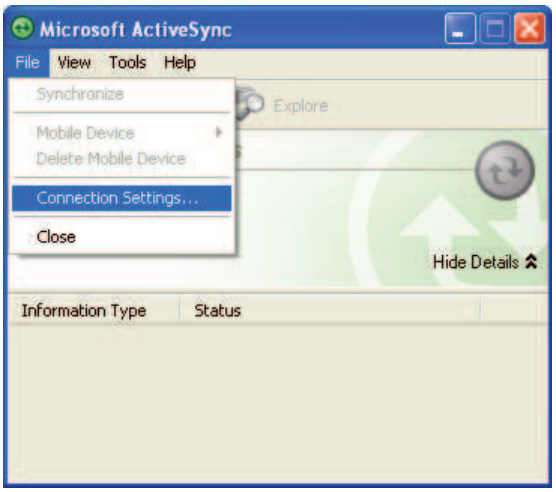

Figure 7.13

2. In **Connection Settings** screen, check in the **Allow connections to one of the following** box and choose **DMA** in the pull-down menu. See Figure 7.14.

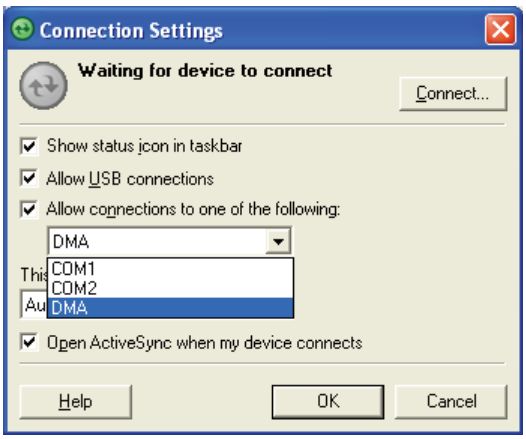

Figure 7.14

Connection via ActiveSync

The way to establish connection of the **Device Emulator** via **ActiveSync** is;

1. Start up the **Device Emulator** by referring to Chapter 7.2 “Starting Up the Device Emulator”.
2. Start up Visual Studio 2008 or Visual Studio 2005, and then navigate to **Tools** → **Device Emulator Manager**. Right-click **DT-X8 Emulator** in **Available Emulators** list and then choose **Cradle** in the popup menu. See Figure 7.15.

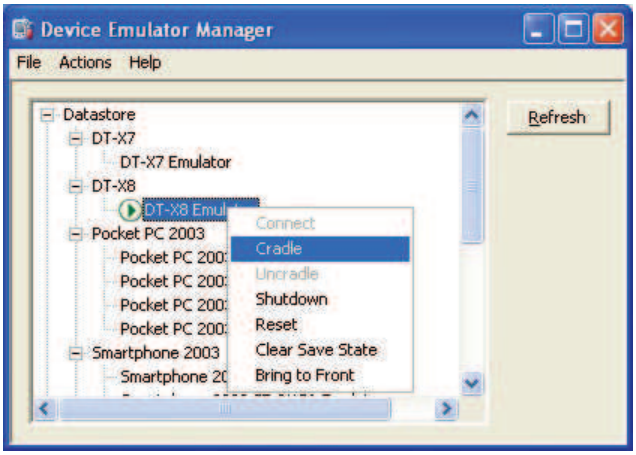

Figure 7.15

3. Make sure ActiveSync has started up and the icon in the status bar appears. See the emulated screen of DT-X8 in Figure 7.16. The icon indicates that the connection via ActiveSync has been established.

Figure 7.16

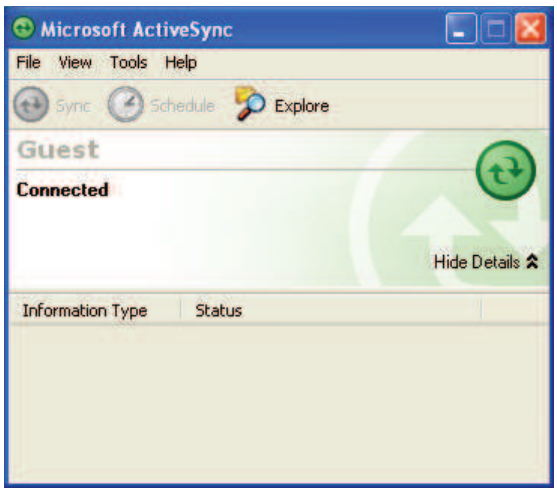

Figure 7.17

7.4 Debugging Applications

This chapter describes how to debug your application using the **Device Emulator**. Before starting to “Build”, establish a connection between the DT-X8 and your PC via ActiveSync by referring to Chapter 7.3 “Using the Device Emulator”.
For the basic order of developing an application, refer to Chapter 8 “Visual Studio”.

Setting Build Configuration

Choose **Debug** in the Solution Configurations pull-down menu in Visual Studio 2008 or Visual Studio 2005 and **DT-X8 Emulator** in the target device pull-down menu. See Figure 7.18.

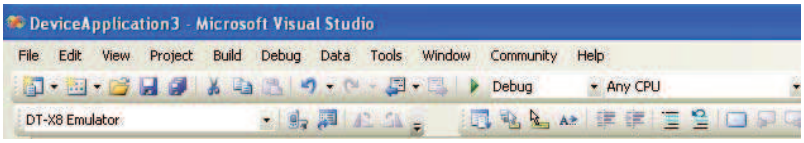
DeviceApplication3 - Microsoft Visual Studio
File Edit View Project Build Debug Data Tools Window Community Help
Debug
Any CPU
DT-X8 Emulator

Figure 7.18

Debugging Applications

- Basic Debug Operation
  The debug operation used for the **Device Emulator** in Visual Studio 2008 or Visual Studio 2005 is the same as an ordinary debug operation using the actual terminal.

- Debugging with the Device Emulator
  With the **Device Emulator**, it is possible to set a break point in the source code of the application for step-by-step debugging.

  1. Navigate to **Debug** menu → **Start Debugging** to start up the debugger.

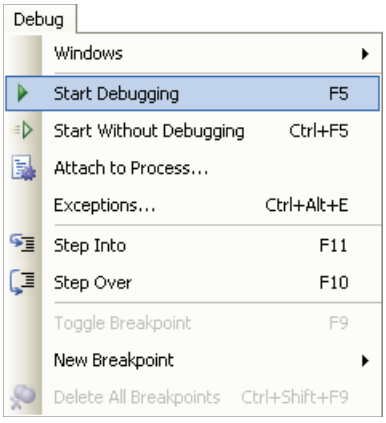

Figure 7.19

2. Similar to ordinary debugging operations with an actual DT-X8, the **Device Emulator** allows break point setting (circled in red in Figure 7.20) in the source code and step-by-step debugging.

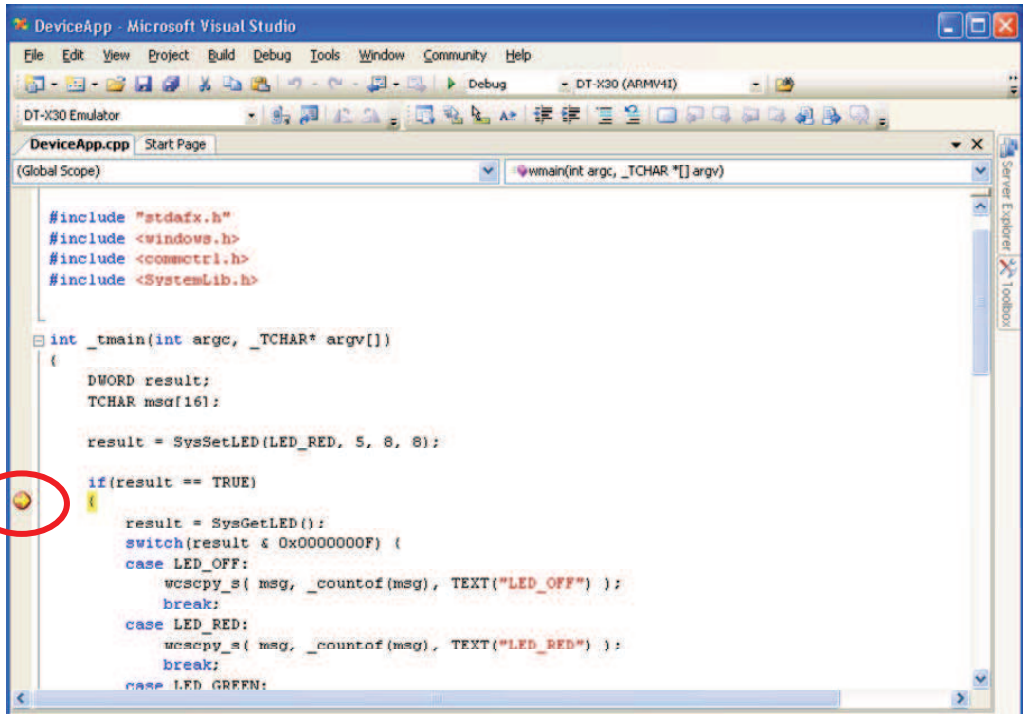

Figure 7.20

8. Visual Studio

This chapter describes application development steps in Visual Studio 2008 or Visual Studio 2005 to create an example program. The example program referred to in this chapter is an application program developed in three development environments - C++, Visual Basic and C# - using the CASIO Common Device Control Library or Common Device Control Class Library. The example program for all three environments repeats turning on and off the LED to brink for a period of 5 seconds. See Chapters 8.1 “Developing in C++”, 8.2 “Developing in VB” and 8.3 “Developing in C#” for each development environment.

For the list of the libraries provided by the DT-X8 BDK, refer to Chapter 1.2 “Library Configuration”. For detail about each function of the Common Device Control Library and Common Device Control Class Library, refer to Common Device Control Library Manual.

The example program in this chapter runs also in the Device Emulator. To use the emulator, rename **DT-X8 Device** to **DT-X8 Emulator**.

Notes:

- Functions of the Common Device Control Library which control various individual devices integrated in the DT-X8 have different name spaces and names from those available for the previous CASIO handheld terminals. They are not compatible with the ones in the previous CASIO library. The exceptions are DT-X7, DT-X11, and IT-600 that use the same libraries.
- Applications developed with any functions of CASIO dedicated library must be rewritten by replacing the dedicated functions with the appropriate functions from the Common Device Control Library.
- Take care when using Visual Studio 2008 or Visual Studio 2005 to upgrade an existing application and always keep a backup of your existing project.

8.1 Developing in C++

This chapter describes necessary steps to develop the example application program (see Chapter 8) in C++ environment using the Common Device Control Library.
Before proceeding to creating the project, check if the installation folder for the Common Device Control Library has been registered in Visual Studio 2008 or Visual Studio 2005 by following steps, 1 to 8, below.

1. Navigate to **Tools** → **Options …** and open **Options** screen.
2. Navigate to Projects and Solutions → Directories.
3. Choose DT-X8 (ARMV4I) in Platforms.
4. Choose Include files in **Show directories for:**.
5. If the installation folder has not been registered, append the following.
   C:\Program Files\CASIO\MBSYS\include
6. Choose Library files in **Show directories for:**.
7. If the files have not been registered, append the following.
   C:\Program Files\CASIO\MBSYS\lib\ARMV4I
8. Click **OK** button to close the screen.

Application Development Procedure

Subsequent steps show how to create and start up a simple program using one of the system functions. When running the program, the LED will blink in red for 5 seconds.

1. First, create **Win32 Smart Device Project** with its device name **DeviceApp** for Visual C++ in Visual Studio 2008 or Visual Studio 2005.
2. Choose **Pocket PC 2003** in the Selected BDKs field in the Platforms of Win32 Smart Device Project Wizard and click **<** button.

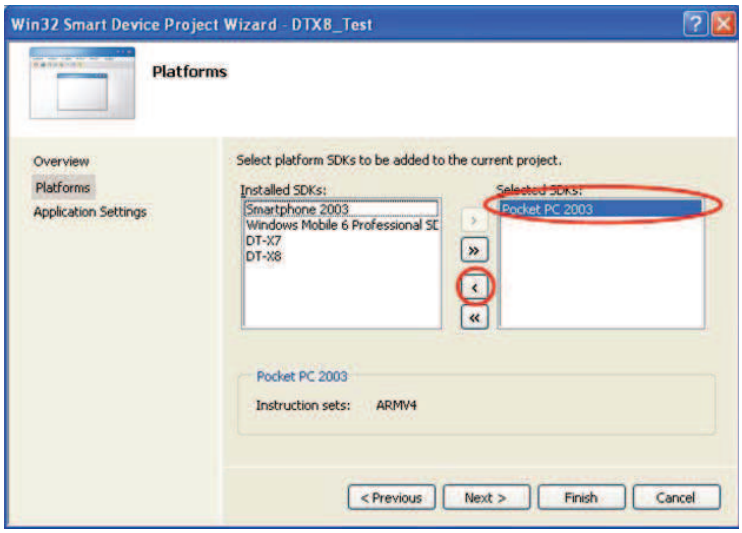

Figure 8.1

3. Choose **DT-X8** in the **Installed BDKs** (**SDKs** in the screen) field and click **>** button.

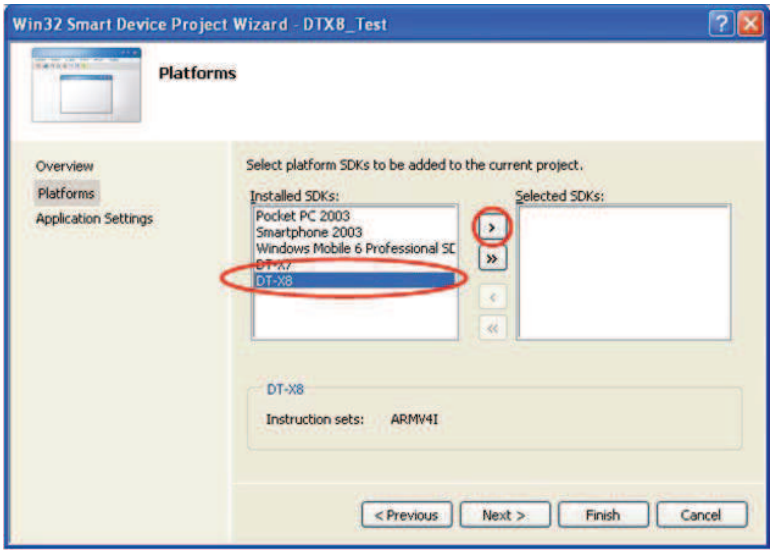

Figure 8.2

4. Click **Next >** button while **DT-X8** is kept being highlighted in the **Selected BDKs** (**SDKs** in the screen) field.

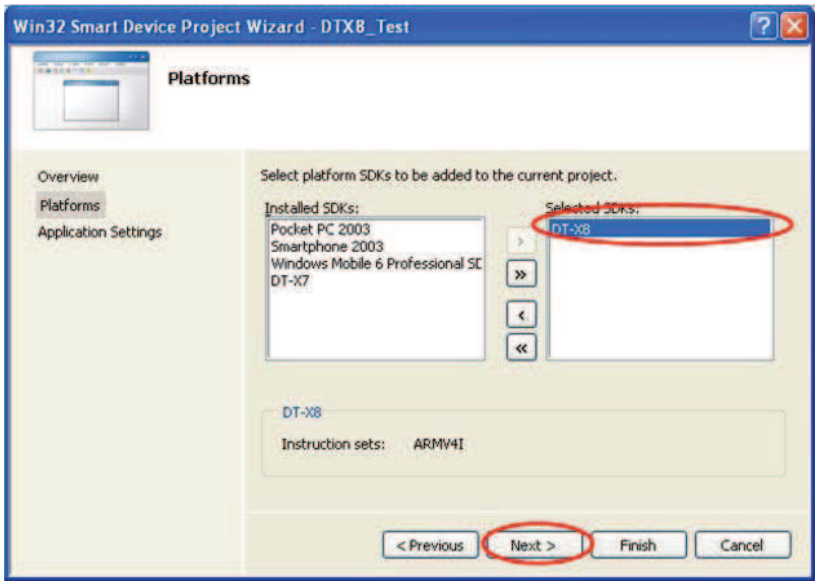

Figure 8.3

5. Choose Console Application for the Application type in the Application Settings menu, and click **Finish** button.
6. In Solution Explorer, click **DeviceApp.cpp** and then append the source code below subsequent to "#include <commctrl.h>".

```
#include <SystemLib.h>
#if !defined(_countof)
#define _countof(_Array) (sizeof(_Array) / sizeof(_Array[0]))
#endif
```

7. Append the source code below in the main function of **DeviceApp.cpp**.

```
DWORD result;
TCHAR msg[16];

result = SysSetLED(LED_RED, 5, 8, 8);

if(result == TRUE)
{
    result = SysGetLED();
    switch(result & 0x0000000F) {
    case LED_OFF:
        wcscpy_s( msg, _countof(msg), TEXT("LED_OFF") );
        break;
    case LED_RED:
        wcscpy_s( msg, _countof(msg), TEXT("LED_RED") );
        break;
    case LED_GREEN:
        wcscpy_s( msg, _countof(msg), TEXT("LED_GREEN") );
        break;
    case LED_ORANGE:
        wcscpy_s( msg, _countof(msg), TEXT("LED_ORANGE") );
        break;
    case LED_BLUE:
        wcscpy_s( msg, _countof(msg), TEXT("LED_BLUE") );
        break;
    case LED_CYAN:
        wcscpy_s( msg, _countof(msg), TEXT("LED_CYAN") );
        break;
    case LED_MAGENTA:
        wcscpy_s( msg, _countof(msg), TEXT("LED_MAGENTA") );
        break;
    default:
        wcscpy_s( msg, _countof(msg), TEXT("LED_UNKNOWN") );
        break;
    }
    MessageBox(NULL, msg, TEXT("LED"), MB_OK);
}
```

8. Choose **Properties** in the Project of Visual Studio 2008 or Visual Studio 2005, and navigate to **Configuration Properties** → **Linker** → **Input** → **Additional Dependencies** and then append **SystemLib.lib** (see red circle in Figure 8.4).

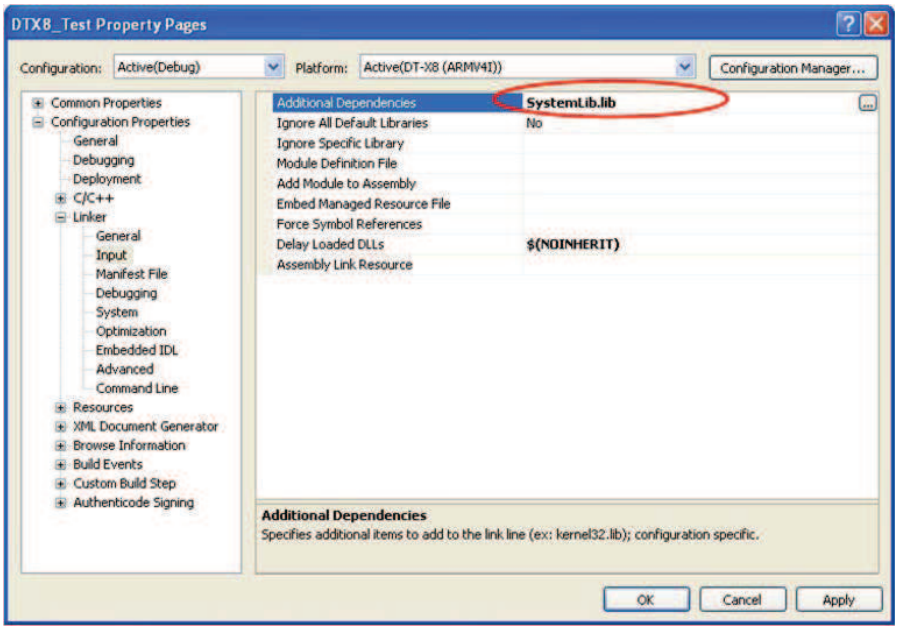

Figure 8.4

9. Choose **DT-X8 Device** for the Target Device to establish connection with the PC.
10. Choose Debug in Visual Studio 2008 or Visual Studio 2005 and then click either Start Debugging or Start Without Debugging.
11. The project will be built and copied to the "\Program Files\<name of project>" folder by default in the DT-X8.
12. Check that the program runs correctly on the DT-X8.

8.2 Developing in VB

This chapter describes necessary steps to develop the example application program (see Chapter 8) in VB environment using the Common Device Control Class Library.

Application Development Procedure

Subsequent steps show how to create and start up a simple program using one of the system functions. When running the program, the LED will blink in red for 5 seconds.

1. Create a new VB Smart Device Application in Visual Studio.
2. In Solution Explorer, right-click **References** and click **Add Reference…**
3. Click **Browse** and navigate to the folder where you have stored the CASIO .NET library files. Highlight **SystemLibNet.dll** and click it to open. Click **OK** button.

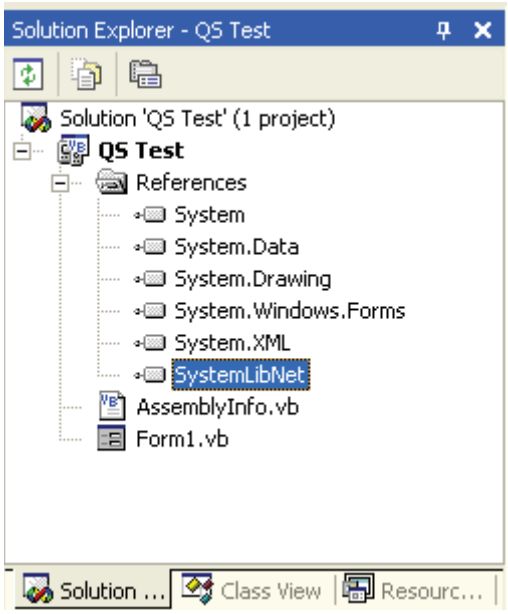

Figure 8.5

4. Add a button to the form, rename it **LED**, and double click it.

5. In the event function for the button to click, add the following code.

```
Dim result As Int32
Dim msg As String

result = Calib.SystemLibNet.Api.SysSetLED( _
          Calib.SystemLibNet.Def.LED_RED, 5, 8, 8)

'.NET vales of "true" and "false" are "-1" and "0" respectively.
If result = -1 Then
   result = Calib.SystemLibNet.Api.SysGetLED()
   Select Case (result And &HF)
      Case Calib.SystemLibNet.Def.LED_OFF
         msg = "LED_OFF"
      Case Calib.SystemLibNet.Def.LED_RED
         msg = "LED_RED"
      Case Calib.SystemLibNet.Def.LED_GREEN
         msg = "LED_GREEN"
      Case Calib.SystemLibNet.Def.LED_ORANGE
         msg = "LED_ORANGE"
      Case Calib.SystemLibNet.Def.LED_BLUE
         msg = "LED_BLUE"
      Case Calib.SystemLibNet.Def.LED_CYAN
         msg = "LED_CYAN"
      Case Calib.SystemLibNet.Def.LED_MAGENTA
         msg = "LED_MAGENTA"
      Case Else
         msg = "LED_UNKNOWN"
   End Select
   MessageBox.Show(msg, "LED")
End If
```

Note:
If you type this code manually you should see the IntelliSense offer you suitable options as appropriate. If you do not, make sure you review steps 1 to 5 to make sure you have added the reference correctly.

6. Initiate **ActiveSync** to establish connection between the DT-X8 and PC.
7. Choose Deploy <name of project> on Build menu.
8. The project will be built and copied to the DT-X8. By default, it will be copied to **\Program Files\<name of project>** folder. **SystemLibNet.dll** will be deployed to the same folder.
9. Check that the program works correctly on the DT-X8.

8.3 Developing in C#

This chapter describes necessary steps to develop the example application program (see Chapter 8) in C# environment using the Common Device Control Class Library.

Application Development Procedure

Subsequent steps show how to create and start up a simple program using one of the system functions. When running the program, the LED will blink in red for 5 seconds.

1. Create a new C# Smart Device Application in Visual Studio .NET.
2. In **Solution Explorer**, right click **References** and click **Add Reference…**
3. Click **Browse** and navigate to the folder where you have stored the CASIO .NET library files. Highlight **SystemLibNet.dll** and click **Open**. Click **OK** button.

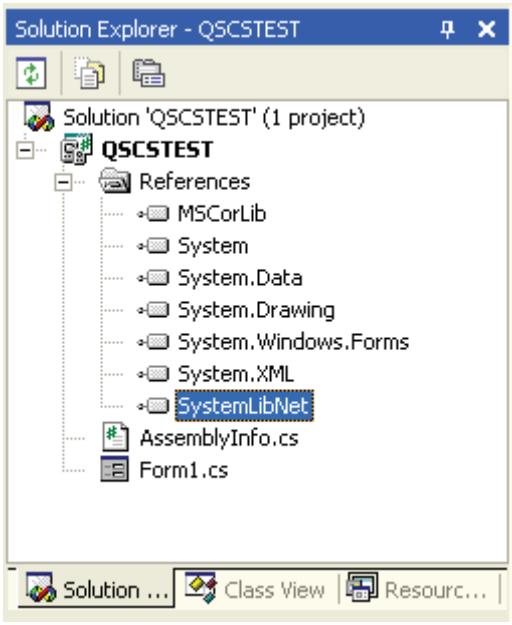

Figure 8.6

4. At the top of your source file add the following code.

```
using Calib;
```

5. Add a button to your form, rename it LED and double click it and then add the following code:

```
Int32 result = new Int32();
string msg;

result = SystemLibNet.Api.SysSetLED(SystemLibNet.Def.LED_RED, 5,
8, 8);

// .Net values “true” and “false” are “-1” and “0” respectively.
if(result == -1)
{
    result = SystemLibNet.Api.SysGetLED();
    switch(result & 0x0000000F)
    {
        case SystemLibNet.Def.LED_OFF:
            msg = "LED_OFF";
            break;
        case SystemLibNet.Def.LED_RED:
            msg = "LED_RED";
            break;
        case SystemLibNet.Def.LED_GREEN:
            msg = "LED_GREEN";
            break;
        case SystemLibNet.Def.LED_ORANGE:
            msg = "LED_ORANGE";
            break;
        case SystemLibNet.Def.LED_BLUE:
            msg = "LED_BLUE";
            break;
        case SystemLibNet.Def.LED_CYAN:
            msg = "LED_CYAN";
            break;
        case SystemLibNet.Def.LED_MAGENTA:
            msg = "LED_MAGENTA";
            break;
        default:
            msg = "LED_UNKNOWN";
            break;
    }
    MessageBox.Show( msg, "LED");
}
```

Note:
If you add this code manually you should see the IntelliSense offer you suitable options as appropriate. If you do not see this, then review steps 2 to 4 in the previous page to make sure you have not made a mistake.

6. Initiate **ActiveSync** to establish connection between the DT-X8 and PC.
7. Select Deploy <name of project> on Build menu.
8. The project will be built and copied to the DT-X8. By default, it will be copied to \Program Files\<name of project> folder. **SystemLibNet.dll** will be deployed to the same folder.
9. Check that the program works correctly on the device.

9. Resources

Microsoft's own http://msdn.microsoft.com/mobility/ is an extremely comprehensive resource for programmers targeting WindowsCE .NET based devices. It includes links to most other useful web based resources. You will find detailed Software and Library manuals on http://world.casio.com/system/pa.